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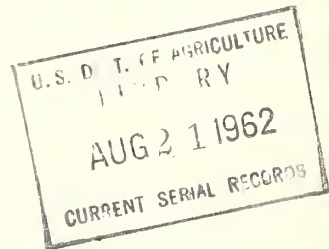
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UNITED STATES DEPARTMENT OF AGRICULTURE
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Crops Research Division

AN EVALUATION OF SEVERAL CHEMICALS FOR THEIR HERBICIDAL PROPERTIES
1958 Field Results

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Plant Industry Station
Beltsville, Maryland
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Preliminary Data Not For Publication

This is a progress report of cooperative investigations containing data the interpretation of which may be modified with additional experimentation. Therefore, publication, display, or distribution of any data or any statements herein should not be made without prior written approval of the Crops Research Division, Agricultural Research Service, United States Department of Agriculture, and the cooperating agency or agencies concerned.

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Source and Index of Chemicals Included In This Report

Chemical	Designation *	Source **	Table numbers	
			Pre-emergence	Post-emergence
2,4-dichlorophenoxyacetic acid, alkanolamine salt	2,4-D	DCC ^{2/}	-	42
2,4-dichlorophenoxyacetic acid, propylene glycol butyl ether ester	2,4-D	DCC	-	42
2,4-dichlorophenoxyacetic acid, 2-(2,4,5-trichlorophenoxy)ethanol ester	2,4-D	EURDD ^{4/}	21	43
2-chloro-4-fluorophenoxyacetic acid, n-butyl ester	-	GCD ^{6/}	22	-
2,4,5-trichlorophenoxyacetic acid, propylene glycol butyl ether ester	2,4,5-T	DCC	21	-
2,4,5-trichlorophenoxyacetic acid, 2-(2,4-dichlorophenoxy)ethanol ester	-	EURDD	21	43
2-(2,4-dichlorophenoxy)propionic acid, alkanolamine salt	2-(2,4-DP)	DCC	25	46
Na-[DL-2-(2,4-dichlorophenoxy)propionyl]-L-leucine	-	EURDD	24	46
Na-[DL-2-(2,4-dichlorophenoxy)propionyl]-L-methionine	-	EURDD	24	45
Na-[DL-2-(2,4-dichlorophenoxy)propionyl]-DL-phenylalanine	-	EURDD	24	45
Na-[DL-2-(2,4-dichlorophenoxy)propionyl]-Sta-amino A	-	EURDD	23	44
Na-[DL-2-(2,4-dichlorophenoxy)propionyl]-Sta-amino B	-	EURDD	23	44
2-(2,4,5-trichlorophenoxy)propionic acid, propylene glycol butyl ether ester	silvex	DCC	25	-
4-(2,4-dichlorophenoxy)butyric acid, propylene glycol butyl ether ester	4-(2,4-DB)	DCC	-	47
4-(2,4-dichlorophenoxy)butyric acid, 2-(2,4-dichlorophenoxy)ethanol ester	-	EURDD	17	-
4-(2-chloro-4-fluorophenoxy)butyric acid, n-butyl ester	-	GCD	26	-
trichloroacetic acid, sodium salt	TCA	DCC	1, 2	-

Chemical	Designation *	Source **	Table numbers	
			Pre-emergence	Post-emergence
2,2-dichloropropionic acid, sodium salt	dalapon	DCC	20	40
Na-(2,2-dichloropropionyl)-L-leucine	-	EURDD	-	40
2,3-dichloroisobutyric acid, sodium salt	-	RHC ^{10/}	20	-
3-(p-chlorophenyl)-1,1-dimethylurea	nomuron	EID ^{3/}	1, 2	-
3-(p-chlorophenyl)-1,1-dimethylurea trichloroacetate	-	GCD	2	-
1,2,4,5-tetrachlorobenzene	-	DCC	18	-
2,3,6-trichlorophenylacetamide	-	HCC ^{7/}	17	-
2,3,5-trichlorobenzoic acid	-	HCC	16	-
2,3,6-trichlorobenzoic acid, sodium salt	2,3,6-TBA	EID	15	36
2,3,6-trichlorobenzoic acid, 2-(2,4-dichlorophenoxy)ethanol ester	-	EURDD	-	39
2,3,6-trichlorobenzoic acid-L-leucine	-	EURDD	17	39
2,5-dichloro-3-nitrobenzoic acid	-	ACP ^{1/}	18	38
2-methoxy-3,5-dichlorobenzoic acid	-	VEL ^{13/}	16	37
2-methoxy-3,6-dichlorobenzoic acid	-	VEL	15	36
2-methoxy-3,5,6-trichlorobenzoic acid	-	VEL	12	37
polychlorobenzoic acid, sodium salt	-	VEL	14	34
polychlorobenzoic acid, potassium salt	-	VEL	14	34
polychlorobenzoic acid, monoethanolamine salt	-	VEL	12	35

Chemical	Designation *	Source **	Table numbers	
			Pre-emergence	Post-emergence
polychlorobenzoic acid, diethanolamine salt	-	VEL	13	35
polychlorobenzoic acid, triethanolamine salt	-	VEL	13	35
isopropyl N-(3-chlorophenyl)carbamate	CIPC	NFM ^{8/}	10	-
4-chloro-2-butyryl N-(3-chlorophenyl)carbamate	-	SCC ^{11/}	10	-
ethyl N,N-di-n-propylthiocarbamate	EPTC	STF ^{12/}	11	-
2-chloroallyl diethyldithiocarbamate	CDEC	MCC ^{14/}	11	-
2-methoxy-4-diethylamino-6-isopropylamino-s-triazine	-	GCC ^{5/}	3	27
2-methoxy-4-isopropylamino-6-methylamino-s-triazine	-	GCC	4	27
2-methoxy-4-isopropylamino-6-ethylamino-s-triazine	-	GCC	4	28
2-methoxy-4,6-bis(ethylamino)-s-triazine	-	GCC	5	28
2-methoxy-4,6-bis(isopropylamino)-s-triazine	-	GCC	5	29
2-chloro-4-ethylamino-6-diethylamino-s-triazine	-	GCC	6	29
2-chloro-4-diethylamino-6-isopropylamino-s-triazine	-	GCC	6	30
2-chloro-4-n-propylamino-6-isopropylamino-s-triazine	-	GCC	7	30
2-chloro-4-isopropylamino-6-methylamino-s-triazine	-	GCC	7	31
2-chloro-4-isopropylamino-6-ethylamino-s-triazine	-	GCC	8	31
2-chloro-4,6-bis(ethylamino)-s-triazine	simazin	GCC	8	32

Chemical	Designation *	Source **	Table numbers	
			Pre-emergence	Post-emergence
2-chloro-4,6-bis(diethylamino)-s-triazine	CDT	GCC	9	32
2-chloro-4,6-bis(isopropylamino)-s-triazine	-	GCC	9	33
1,1'-ethylene-2,2'-dipyridylium dibromide	-	PPL ^{9/}	19	41

* Designation refers to the acid equivalent where applicable, and when not applicable to the active ingredient.

** Source

Abbreviation

Source of Chemicals

Person(s) to Contact

1/ ACP	Amchem Products, Inc., Ambler, Pennsylvania	R. H. Beatty
2/ DCC	Dow Chemical Company, Midland, Michigan	L. Southwick; J. E. Johnson
3/ ECD	E. I. duPont deNemours and Company, Wilmington, Delaware	R. W. Varner
4/ EURDD	Eastern Utilization Research and Development Division, USDA, Philadelphia, Pennsylvania	C. F. Krewson
5/ GCC	Geigy Chemical Corporation, Yonkers, New York	C. E. Bartley
6/ GCD	General Chemical Division, Allied Chemical and Dye, Morristown, New Jersey	M. M. Darley
7/ HCC	Hooker Chemical Corporation, Niagara Falls, New York	J. S. Sconce
8/ NFM	Niagara Chemical Division, Food Machinery and Chemical Corporation, Middleport, New York	E. S. Hagood
9/ PPL	Plant Protection Ltd., Fernhurst, Surrey, England	H. P. Allen
10/ RHC	Rohm and Haas, Philadelphia, Pennsylvania	D. W. Young
11/ SOC	Spencer Chemical Company, Kansas City, Missouri	H. C. Zeisig
12/ STF	Stauffer Chemical Company, Mountain View, California	J. Antognini
13/ VEL	Velsicol Chemical Corporation, Chicago, Illinois	L. L. Stitt
14/ MCC	Monsanto Chemical Company, St. Louis, Missouri	L. H. Hannah

AN EVALUATION OF SEVERAL CHEMICALS FOR THEIR HERBICIDAL PROPERTIES

1958 Field Results

W. A. Gentner and W. C. Shaw ^{1/}

The purpose of this report is to present the 1958 results of the primary field evaluation studies of the herbicide evaluation project conducted by personnel of the Weed Control in Crops Section, Crops Protection Research Branch, at the Plant Industry Station, Beltsville, Maryland.

The objectives of the herbicide evaluation project are: (1) to develop herbicide evaluation techniques, (2) to determine the response of crops and weeds to new chemicals applied as pre-emergence and post-emergence sprays, (3) to study the relationships between chemical structure and herbicidal activity, (4) to obtain preliminary information on the herbicidal properties of new chemicals, and (5) to make this information available to Department of Agriculture personnel and cooperating state and chemical industry weed workers.

These field evaluation studies should be interpreted as preliminary and the results analyzed and used accordingly. ✓

Materials and Methods

Twenty-six crop plants and seven weed species were seeded May 21, 1958 on a well fertilized, moderately well drained, dark brown Keyport silt loam soil at Beltsville, Maryland. Each crop with the exception of sansevieria was seeded with a calibrated tractor-powered seeder at the recommended depth and rate of seeding in four rows spaced 20 inches apart. Greenhouse grown sansevieria was transplanted in the post-emergence plots on May 21. Plot size was 140 ft. x 5 ft. with subplots for each species of 5 ft. x 6½ ft. in size. Crabgrass (Digitaria sanguinalis), annual ryegrass (Lolium multiflorum), mustard (Brassica kaber), pigweed (Amaranthus retroflexus), and lambsquarters (Chenopodium album) were broadcast seeded in the experiment to insure a stand of weeds in addition to the weed seed populations already present in the soil. The term "broadleaf weeds" in Tables 1 through 54 refers collectively to ragweed (Ambrosia artemisiifolia), smartweed (Polygonum pensylvanicum), carpetweed (Mollugo verticillata), and volunteer mustard which infested the experimental area. The term "grasses" which occurs in these tables refers to various Setaria species, barnyard grass (Echinochloa crusgalli) and goosegrass (Eleusine indica).

The crop plants, weed species, chemical rate and time of chemical application are indicated in Tables 1 through 47. The pre-emergence treatments were applied May 22, the day after planting. The post-emergence treatments

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were applied on July 2, 1958, when the average height in inches of crop and weed species was as follows: lima beans - 7, cucumber - 7, cotton - 4, soybeans - 8, sugar beets - 8, flax - 12, snapbeans - 9, safflower - 9, castorbeans - 11, corn - 17, peanuts - 5, gladiolus - 17, chestnuts - 6, sorghum - 13, Sudan grass - 9, buckwheat - 21, squash - 14, oats - 14, cowpeas - 12, red clover - 4, alfalfa - 6, lespedeza - 3, white clover - 2, birdsfoot trefoil - 2, sansevieria - 10, crabgrass - 4, ryegrass - 7, pigweed - 6, mustard - 8, and lambsquarters - 9.

The chemicals, depending on their solubility, were applied in either 40 gallons of acetone containing 1 percent polyoxyethylene sorbitan monolaurate per acre, or a mixture of 20 gallons of acetone, plus 20 gallons of water and 1 percent polyoxyethylene sorbitan monolaurate for a total volume of 40 gallons per acre, or in 40 gallons of water per acre. A small plot sprayer operated at 2 mph and 30 psi was used to apply all chemicals.

All rates of application are given on an acid equivalent basis when applicable, and when not applicable, the rates of application are given on an active ingredient basis.

A numerical rating scale was used to indicate the injury to the crops and weed species (Tables 1-47). The injury ratings (Inj. Sc. No.) were made according to the following scale: 0-no visible effect; 1,2,3-slight injury, plants usually recovered with little or no reduction in top growth; 4,5,6-moderate injury, plants usually recovered but with reduced top growth; 7,8,9-severe injury, plants usually did not recover; 10-all plants killed. The injury ratings and the percentage crop and weed kill were based on three independent visual estimates.

The pre-emergence response data in Tables 1 through 26 were obtained 60 days after treatment while the post-emergence response data in Tables 27 through 47 were obtained 28 days after treatment.

Rainfall and temperature prior to and after the
1958 pre-emergence and post-emergence treatments

	Total rainfall inches	Min. temp. °F. av.	Max. temp. °F. av.
<u>Chemicals applied pre-emergence, May 22, 1958</u>			
30 days prior to treatment	5.27	49.2	70.5
7 days prior to treatment	.58	53.7	78.0
7 days after treatment	.46	50.4	75.6
30 days after treatment	2.66	54.2	78.4
<u>Chemicals applied post-emergence, July 2, 1958</u>			
30 days prior to treatment	3.64	55.5	79.2
7 days prior to treatment	.17	56.6	83.4
7 days after treatment	4.51	67.1	91.4
30 days after treatment	8.70	66.0	86.6

Results and Discussion

The results of the pre-emergence treatments are reported in tables 1 - 26 and a summary of the comparative herbicidal efficiency of selected rates of application of these compounds is presented in tables 48 - 51. Germination of the woody perennial species was somewhat erratic and emergence took place over a 5 - 12 week period from the time of planting. Due to the erratic germination and extended periods of emergence, it was difficult to obtain conclusive data on the response of the woody species to the chemicals. The data on the response of woody species are indicative of initial responses only, and do not indicate what the residual effects on established woody species might be.

The results of the post-emergence treatments are included in tables 27 - 47 and a tabular summary of the comparative herbicidal efficiency of selected application rates of the compounds applied as post-emergence sprays is presented in tables 52 - 54.

The data reported herein are preliminary and are an expression of plant responses to chemicals under defined conditions. These data should not be interpreted as being exact or final for each chemical and species under all environmental conditions. Nevertheless, the average toxicity ratings for the test species in each table may be used for the comparison of the herbicidal efficiency of the compounds included in this report.

The substituted s-triazine derivatives. Thirteen variously substituted s-triazine compounds were evaluated for their comparative herbicidal activity as pre- and post-emergence sprays (tables 3 - 9 and 27 - 33).

The responses of the test species to the pre-emergence application of these compounds were, in general, quite similar but several derivatives possessed considerable specificity and selectivity (tables 3 - 9). Cotton and soybeans showed considerable tolerance to pre-emergence sprays of 2-methoxy-4,6-bis(ethylamino)-s-triazine; 2-methoxy-4-diethylamino-6-isopropylamino-s-triazine, and some tolerance to 2-chloro-4-ethylamino-6-diethylamino-s-triazine (tables 3, 5, and 6). Several tree species including walnuts, pecans, or Chinese chestnuts were quite tolerant to 2-methoxy-4,6-bis(ethylamino)-s-triazine; 2-methoxy-4,6-bis(isopropylamino)-s-triazine; 2-chloro-4-isopropylamino-6-methylamino-s-triazine, and 2-chloro-4,6-bis(isopropylamino)-s-triazine.

Corn showed considerable tolerance to 9 s-triazines, while the following compounds caused considerable injury to corn when applied as pre-emergence sprays: 2-methoxy-4-isopropylamino-6-methylamino-s-triazine; 2-methoxy-4-isopropylamino-6-ethylamino-s-triazine; 2-methoxy-4,6-bis(isopropylamino)-s-triazine, and 2-chloro-4-isopropylamino-6-ethylamino-s-triazine (tables 4, 5, and 8).

Gladiolus appeared quite tolerant to several s-triazine derivatives and the need for further evaluation of these compounds for pre-emergence weed control in this and related crops is suggested.

As pre-emergence sprays, the order of average initial activity on all species of the s-triazine derivatives with the most active first was: 2-methoxy-4-isopropylamino-6-ethylamino-s-triazine; 2-methoxy-4-isopropylamino-6-methylamino-s-triazine; 2-chloro-4-isopropylamino-6-ethylamino-s-triazine; 2-methoxy-4,6-bis(isopropylamino)-s-triazine; simazin; 2-chloro-4-isopropylamino-6-methylamino-s-triazine; 2-chloro-4,6-bis(isopropylamino)-s-triazine; 2-chloro-4-diethylamino-6-isopropylamino-s-triazine; 2-chloro-4-ethylamino-6-diethylamino-s-triazine; 2-chloro-4-n-propylamino-6-isopropylamino-s-triazine; 2-chloro-4,6-bis(diethylamino)-s-triazine [CDT]; 2-methoxy-4,6-bis(ethylamino)-s-triazine, and 2-methoxy-4-diethylamino-6-isopropylamino-s-triazine.

The responses of the test species to the post-emergence application of the s-triazines are recorded on tables 27 - 33. In general, the methoxy substituted s-triazines possessed more contact activity than those compounds which did not possess a methoxy substitution.

Cotton was quite tolerant to post-emergence sprays of the following s-triazine derivatives: 2-methoxy-4-diethylamino-6-isopropylamino-s-triazine; simazin; CDT; 2-methoxy-4,6-bis(isopropylamino)-s-triazine, and 2-chloro-4-ethylamino-6-diethylamino-s-triazine. Soybeans were not severely damaged by low rates of simazin; 2-methoxy-4,6-bis(isopropylamino)-s-triazine, and 2-chloro-4-ethylamino-6-diethylamino-s-triazine. The relatively low post-emergence activity of the above named compounds on cotton and/or soybeans warrants further research to evaluate them especially as directed post-emergence herbicides on these and related crops.

Corn was seriously injured by post-emergence sprays of 2-methoxy-4,6-bis(isopropylamino)-s-triazine; 2-methoxy-4-isopropylamino-6-ethylamino-s-triazine, and 2-chloro-4-n-propylamino-6-isopropylamino-s-triazine (tables 28, 29, and 30).

As post-emergence sprays, the order of residual activity with the most active first was: 2-chloro-4-isopropylamino-6-ethylamino-s-triazine; 2-methoxy-4-isopropylamino-6-ethylamino-s-triazine; 2-chloro-4-isopropylamino-6-methylamino-s-triazine; simazin; 2-chloro-4-diethylamino-6-isopropylamino-s-triazine; 2-chloro-4,6-bis(isopropylamino)-s-triazine; 2-methoxy-4-isopropylamino-6-methylamino-s-triazine; 2-methoxy-4-diethylamino-6-isopropylamino-s-triazine; 2-methoxy-4,6-bis(isopropylamino)-s-triazine; 2-chloro-4-n-propylamino-6-isopropylamino-s-triazine; 2-chloro-4-ethylamino-6-diethylamino-s-triazine; 2-methoxy-4,6-bis(ethylamino)-s-triazine, and CDT.

The carbamates. Four carbamates were evaluated as pre-emergence sprays. Ethyl N,N-di-n-propylthiolcarbamate [EPTC] was less injurious to sugar beets, flax, buckwheat, and small seeded legumes than isopropyl N-(3-chlorophenyl) carbamate [CIPC]. However, CIPC was less injurious to soybeans, safflower, and castorbeans than EPTC. The 4-chloro-2-butynyl N-(3-chlorophenyl)carbamate was very active on buckwheat, ryegrass, flax, and squash, but showed low activity on several crops. The order of activity of the carbamates with the most active first was: CIPC; EPTC; 2-chloroallyl-diethyldithiocarbamate [CDEC], and 4-chloro-2-butynyl N-(3-chlorophenyl)carbamate.

The benzoic acid derivatives and related compounds. Fourteen variously substituted benzoic acids or derivatives were evaluated for their comparative herbicidal activity and selectivity as pre-emergence sprays (tables 12 - 18), and 12 as post-emergence sprays (tables 34 - 39).

Six variously substituted benzoic acids were applied as pre-emergence sprays and compared with the sodium salt of 2,3,6-trichlorobenzoic acid. The order of activity with the most active first was: sodium salt of 2,3,6-TBA; 2-methoxy-3,6-dichlorobenzoic acid; 2-methoxy-3,5,6-trichlorobenzoic acid; 2,3,5-trichlorobenzoic acid; 2,5-dichloro-3-nitrobenzoic acid; 2-methoxy-3,5-dichlorobenzoic acid, and 2,3,6-trichlorobenzoic acid-L-leucine. The 2-methoxy substitution of several chloro-substituted analogues resulted in striking differences in the responses of the test plants. The substitution of methoxy rather than chlorine in the 2-position of 2,3,5-trichlorobenzoic acid greatly reduced the activity of the latter compound. The pre-emergence activity of 2-methoxy-3,6-dichlorobenzoic acid and 2-methoxy-3,5,6-trichlorobenzoic acid was striking. A comparison of 2-methoxy-3,6-dichlorobenzoic acid and the sodium salt of 2,3,6-TBA showed that, in general, the methoxy analogue was less toxic to the various grasses than 2,3,6-TBA (table 15). The substitution of L-leucine on the 2,3,6-TBA greatly reduced its activity. On the other hand, the substitution of a nitro group in the 3-position of 2,3,5-trichlorobenzoic acid produced an increase in specificity of action. The new compound 2,5-dichloro-3-nitrobenzoic acid looked quite promising for the pre-emergence control of crabgrass (table 18).

Several salts of polychlorobenzoic acid were evaluated. The order of activity was: sodium, potassium, monoethanolamine, diethanolamine, and triethanolamine salts of polychlorobenzoic acid (tables 12, 13, and 14).

The 2,3,6-trichlorophenylacetamide was, in general, slightly more active than the sodium salt of 2,3,6-TBA, and was considerably more toxic to grass species than the latter (tables 15 and 17). The 1,2,4,5-tetrachlorobenzene was quite active on most crops and weeds with the exception of buckwheat, gladiolus, peanuts, ryegrass, and mustard.

Twelve variously substituted benzoic acids or derivatives were evaluated for their post-emergence activity.

Five variously substituted benzoic acids were evaluated for their post-emergence activity in comparison to the sodium salt of 2,3,6-TBA. The order of post-emergence activity with the most active first was: 2-methoxy-3,6-dichlorobenzoic acid; sodium salt of 2,3,6-TBA; 2-methoxy-3,5,6-trichlorobenzoic acid; 2-methoxy-3,5-dichlorobenzoic acid; 2,5-dichloro-3-nitrobenzoic acid, and 2,3,6-trichlorobenzoic acid-L-leucine. The 2-methoxy-3,6-dichlorobenzoic acid was generally more active on the dicotyledonous species and less active on the monocotyledonous species than 2,3,6-TBA. The post-emergence herbicidal activity of 2-methoxy-3,6-dichlorobenzoic acid and 2-methoxy-3,5,6-trichlorobenzoic acid was very high, but there were no significant differences in the overall level of activity when compared to 2,3,6-TBA. The attachment of the amino acid, L-leucine to the 2,3,6-TBA molecule apparently reduced the activity of the active moiety. The activity of 2-(2,4-dichlorophenoxy)ethanol ester of 2,3,6-TBA was reduced when compared to the sodium salt of 2,3,6-TBA (tables 36 and 39).

Five salts of polychlorobenzoic acid were applied as post-emergence sprays. Their activity with the most active first was: sodium; potassium; monoethanolamine; diethanolamine, and triethanolamine salts of polychlorobenzoic acid (tables 34 and 35).

The chloro-substituted aliphatic acids and derivatives. Four chloro-substituted aliphatic acids or derivatives and several physical mixtures of one of these compounds with 3-(p-chlorophenyl)-1,1-dimethylurea [monuron] were evaluated for their pre-emergence herbicidal activity and selectivity.

The sodium salt of 2,3-dichloroisobutyric acid was more active as a pre-emergence spray than the sodium salt of 2,2-dichloropropionic acid [dalapon] (table 20). The activity of the physical mixtures of trichloroacetic acid [TCA] and monuron was not significantly different from the activity of comparable rates of 3-(p-chlorophenyl)-1,1-dimethylurea trichloroacetate, and there was no indication of synergism (tables 1 and 2).

Two chloro-substituted aliphatic acid derivatives were evaluated for their post-emergence herbicidal activity (table 40). The activity of Na-(2,2-dichloropropionyl)-L-leucine was reduced when compared with the activity of dalapon. However, the activity of the amino acid substituted analogue of dalapon was equally as active as dalapon on crabgrass, foxtail grasses, barnyard grass, and goosegrass.

The phenoxyalkylcarboxylic acids and derivatives. Several esters, salts, and amino acid substituted phenoxyalkylcarboxylic acids or derivatives were evaluated for their **pre- and post-emergence herbicidal** activity. As pre-emergence sprays, the gamma substituted phenoxybutyric acids caused test plant responses very similar to the acetic acid derivatives with the same ring substitution. As pre-emergence sprays, amino acid substituted DL-2-(2,4-dichlorophenoxy)propionic acids and derivatives were, in general, relatively inactive. However, the $\text{Na}^+[\text{DL-2-(2,4-dichlorophenoxy)propionyl}]$ -Sta-amino A was quite active on the small seeded legumes (tables 23 and 24).

As post-emergence sprays, the amino acid substituted DL-2-(2,4-dichlorophenoxy)propionic acid and derivatives were quite selective and the degree of activity varied depending on the amino acid substituted in the side chain (tables 44, 45, and 46). The pre- and post-emergence activity of the "double phenoxy" acetic and butyric acid derivatives was quite similar to the activity of the parent compounds.

1,1'-Ethylene-2,2'-dipyridylum dibromide. This compound possessed relatively low activity as a pre-emergence spray (table 19). As a post-emergence spray, it was very toxic to the above-ground plant parts of most species (table 41). Sorghum and Sudan grass were somewhat tolerant to low rates of application. Several test species, especially sugar beets, partially recovered and developed new foliage. The results of this study suggest that the new chemical should be further evaluated as a post-emergence herbicide and crop desiccant under a wide variety of weed and crop conditions.

Residual activity of herbicides. The pre- and post-emergence experimental fields were plowed to a depth of 8 inches on September 3, and the seedbed prepared by thorough disking to a depth of 6 inches. A cover crop of vetch (*Vicia* sp.) and rye (*Secale cereale*) was seeded on September 18, 1958, 164 and 123 days after the pre- and post-emergence treatments were applied respectively.

On September 18, 32 days after the cover crops were seeded, all plots were evaluated for residual activity. The responses of the cover crops to the residual activity of several chemicals are shown in Table A. The data are an average of two independent ratings using the 0 to 10 scale. A rating of 0 means that the chemical possessed no residual phytotoxicity to the cover crops, while a rating of 10 means that the cover crops were killed. The percentage of the two crops killed is also given.

The chemicals applied as pre-emergence sprays which resulted in residual activity to the cover crops were: 2-methoxy-4-diethylamino-6-isopropylamino-s-triazine; 2-methoxy-4-isopropylamino-6-methylamino-s-triazine; 2-methoxy-4-isopropylamino-6-ethylamino-s-triazine; 2-methoxy-4,6-bis(ethylamino)-s-triazine; 2-methoxy-4,6-bis(isopropylamino)-s-triazine; simazin, and 2-chloro-4,6-bis(isopropylamino)-s-triazine. None of the chemicals applied as post-emergence sprays resulted in residual toxicity to the cover crops.

Table A. The residual activity of several herbicides applied as pre-emergence sprays.

Chemical	Rate per acre	Inj. scale value	Vetch	Rye
			Plant kill	Plant kill
	lb.	no.	pct.	pct.
Herbicides applied pre-emergence May 22; cover crops seeded September 18				
2-methoxy-4-diethylamino-6-isopropylamino- <u>s</u> -triazine	2	1.0	5	10
	4	1.0	5	10
	8	2.0	10	20
2-methoxy-4-isopropylamino-6-methylamino- <u>s</u> -triazine	4	2.0	30	40
	8	4.0	60	80
2-methoxy-4-isopropylamino-6-ethylamino- <u>s</u> -triazine	4	3.0	20	60
	8	4.0	40	90
2-methoxy-4,6-bis(ethylamino)- <u>s</u> -triazine	8	1.0	5	10
2-methoxy-4,6-bis(isopropylamino)- <u>s</u> -triazine	4	2.0	40	50
	8	6.0	90	90
2-chloro-4,6-bis(ethylamino)- <u>s</u> -triazine	8	1.0	5	5
2-chloro-4,6-bis(isopropylamino)- <u>s</u> -triazine	4	2.0	40	20
	8	4.0	50	50
Check	0	0.0	0	0

Summary

The responses of 26 test crops and 7 weed species to 55 chemicals applied as pre- and/or post-emergence sprays are recorded in tables 1 through 47, and summarized in tables 48 through 54.

1. These comparative studies of 13 s-triazine compounds on several crop and weed species indicated that cotton and soybeans were tolerant to relatively high rates of the following compounds as pre-emergence sprays: 2-methoxy-4,6-bis(ethylamino)-s-triazine; 2-methoxy-4-diethylamino-6-isopropylamino-s-triazine, and 2-chloro-4-ethylamino-6-diethylamino-s-triazine. Cotton and soybeans were not severely damaged by post-emergence applications of simazin; 2-methoxy-4,6-bis(isopropylamino)-s-triazine, and 2-chloro-4-ethylamino-6-diethylamino-s-triazine. Further research is needed to determine whether efficient weed control may be achieved with the s-triazines in these and related crops without crop injury.

2. The high activity and selectivity of 2-methoxy-3,6-dichlorobenzoic acid and 2-methoxy-3,5,6-trichlorobenzoic acid and the tolerance of several grasses to these compounds suggest the need for further research to determine the value of these compounds for weed and woody plant control. As post-emergence sprays, these methoxy-chloro-substituted benzoic acid derivatives were as active or more active than the sodium salt of 2,3,6-TBA.

3. The 2,3,6-trichlorophenylacetamide was more active as a pre-emergence spray than 2,3,6-TBA.

4. The 1,1'-ethylene-2,2'-dipyridylum dibromide possessed relatively low activity as a pre-emergence spray. However, as a post-emergence spray, it was highly active and relatively non-selective. It resulted in the desiccation of all crops except sorghum and Sudan grass, and further research is needed to evaluate this compound as a post-emergence herbicide, defoliant, and crop desiccant.

A TABULAR SUMMARY OF THE COMPARATIVE HERBICIDAL EFFICIENCY
OF THE CHEMICALS AS PRE- AND POST-EMERGENCE SPRAYS IS
PRESENTED IN TABLES 48 THROUGH 54

Each chemical at one rate of application has been included in the tabular summary tables. In order to simplify the comparative data, the injury ratings and percentage kill data for each chemical have been combined into an activity index value. This value makes it possible to use a single figure to show the effect of each chemical at one rate of application on each test species. The range of the activity index is from 0 to 100. An activity index value of 0 means the chemical had no effect on the species, while a value of 100 indicates complete kill.

Species and Varietal Names of Crop and Weed Plants

<u>Plants</u>	<u>Scientific Name</u>	<u>Variety</u>
1. Lima beans	<u>Phaseolus limensis</u>	Henderson Bush
2. Cucumber	<u>Cucumis sativus</u>	Marketer
3. Cotton	<u>Gossypium hirsutum</u>	Coker 100 WR
4. Soybeans	<u>Soja max</u>	Clark
5. Sugar beets	<u>Beta vulgaris</u>	SP 55600-01
6. Flax	<u>Linum usitatissimum</u>	Cascade
7. Snapbeans	<u>Phaseolus vulgaris</u>	Black Valentine
8. Safflower	<u>Carthamus tinctorius</u>	Pacific 2
9. Castorbeans	<u>Ricinus communis</u>	Cimarron
10. Corn	<u>Zea mays</u>	US 13
11. Peanuts	<u>Arachis hypogae</u>	Spanish
12. Gladiolus	<u>Gladiolus sp.</u>	Mixed
13. Walnuts	<u>Juglans sp.</u>	English and Persian
14. Pecans	<u>Carya illinoensis</u>	---
15. Chestnuts	<u>Castanea mollissima</u>	Chinese
16. Sorghum	<u>Sorghum vulgare</u>	Amber
17. Sudan grass	<u>Sorghum vulgare sudanense</u>	Sweet 372
18. Buckwheat	<u>Fagopyrum esculentum</u>	---
19. Squash	<u>Cucurbita pepo</u>	E. C. Crookneck
20. Oats	<u>Avena sativa</u>	Clinton 59
21. Cowpeas	<u>Vigna sinensis</u>	Mixed
22. Red clover	<u>Trifolium pratense</u>	Kenland
23. Alfalfa	<u>Medicago sativa</u>	Atlantic
24. Lespedeza	<u>Lespedeza stipulaceae</u>	Climax
25. White clover	<u>Trifolium repens ladino</u>	Pilgrim
26. Birdsfoot trefoil	<u>Lotus corniculatus</u>	Italian
27. Sansevieria	<u>Sansevieria thyrsiflora</u>	---
28. Crabgrass	<u>Digitaria sanguinalis</u>	---
29. Ryegrass	<u>Lolium multiflorum</u>	---
30. Pigweed	<u>Amaranthus retroflexus</u>	---
31. Mustard	<u>Brassica kaber</u>	---
32. Lambsquarters	<u>Chenopodium album</u>	---

Table 1 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	3-(p-chlorophenyl)-1,1-dimethylurea (monuron)				Sodium salt of trichloroacetic acid (TCA, sodium salt)							
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre		4 lb per acre		--- lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	9	90	9	95	7	53	9	95	9	95		
Cucumber	10	100	10	100	7	53	8	63	8	73		
Cotton	4	37	5	53	6	60	8	77	8	80		
Soybeans	3	33	6	60	4	43	6	57	6	63		
Sugar beets	5	60	9	95	6	57	9	90	9	92		
Flax	3	33	6	63	3	30	6	57	6	63		
Snapbeans	4	43	9	92	5	50	7	70	7	73		
Safflower	4	43	7	70	5	53	7	70	7	73		
Castorbeans	7	67	9	92	6	63	9	90	9	92		
Corn	3	10	5	17	5	27	6	53	7	67	Not Applied	
Peanuts	4	43	6	63	4	37	6	57	6	63		
Gladiolus	2	0	3	0	1	0	2	0	3	0		
Walnuts	10	100	10	100	10	100	10	100	10	100		
Pecans	3	33	5	50	2	17	3	27	4	37		
Chestnuts	10	100	10	100	8	83	9	95	9	95		
Sorghum	7	73	9	92	5	53	7	73	8	83		
Sudan grass	7	67	9	95	6	57	8	80	9	92		
Buckwheat	4	43	7	67	7	73	9	90	9	95		
Squash	9	92	10	100	9	92	10	100	10	100		
Oats	7	73	9	95	9	90	9	95	9	95	Not Applied	
Cowpeas	2	3	4	20	3	30	4	40	4	43		
Red clover	10	100	10	100	9	90	9	95	10	100		
Alfalfa	9	95	9	95	4	37	5	49	6	53		
Lespedeza	10	100	10	100	1	13	4	43	6	57		
White clover	10	100	10	100	3	33	9	90	9	95		
B-ft. trefoil	10	100	10	100	3	30	5	53	7	70		
Crop Tox. Av.	6	63	8	77	5	51	7	70	8	75		
Weeds:												
Crabgrass	10	100	10	100	2	20	4	37	5	53		
Ryegrass	9	95	10	100	4	40	6	57	6	60		
Pigweed	9	95	9	95	1	13	2	23	3	23	Not Applied	
Mustard	10	100	10	100	3	27	4	37	6	57		
Lambsquarters	9	92	9	95	1	13	2	23	3	23		
Grasses	9	92	9	95	3	27	4	37	6	57		
Broadleaf	9	95	9	95	1	13	2	23	3	23		
Weed Tox. Av.	9	96	9	97	2	22	3	34	5	42		
Total Tox. Av.	7	70	8	82	5	45	6	62	7	68		

1/ The injury ratings (Inj. sc. no.) in all tables were made according to the following scale: 0-no visible effect; 1,2,3-slight injury, plant usually recovered with little or no reduction in top growth; 4,5,6-moderate injury, plants usually recovered, but with reduced top growth; 7,8,9-severe injury, plants usually did not recover; 10-all plants killed.

2/ Plt. kill pct. - The percentage crop and weed kills were based on the average of three independent visual estimates.

Table 2 - The effect of two chemical treatments as pre-emergence sprays on crops and weeds.

Crops	3-(p-chlorophenyl)-1,1-dimethylurea trichloroacetate						3-(p-chlorophenyl)-1,1-dimethylurea + TCA, sodium salt					
	1 lb per acre		2 lb per acre		4 lb per acre		½ + ½lb per acre		1 + 1 lb per acre		2 + 2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	7	73	9	92	9	92	8	83	9	92	9	95
Cucumber	7	73	10	100	10	100	9	92	10	100	10	100
Cotton	5	47	6	60	7	67	2	20	2	23	3	30
Soybeans	1	10	2	13	3	40	2	23	4	43	7	70
Sugar beets	3	23	5	30	7	60	3	27	4	43	7	67
Flax	4	40	6	60	6	60	3	27	5	40	5	53
Snapbeans	5	47	7	73	7	50	4	37	5	47	6	77
Safflower	4	43	8	77	7	73	4	43	7	67	7	87
Castorbeans	5	47	9	87	8	80	6	63	9	92	10	100
Corn	4	37	4	53	4	30	2	20	3	30	6	63
Peanuts	2	23	5	50	6	53	4	43	6	60	6	63
Gladiolus	0	0	2	0	3	0	2	0	2	0	3	0
Walnuts	10	100	10	100	10	100	10	100	10	100	10	100
Pecans	4	43	9	95	9	95	4	43	6	63	10	100
Chestnuts	9	95	10	100	10	100	9	95	9	95	9	95
Sorghum	4	43	6	63	9	93	7	73	9	92	9	95
Sudan grass	3	30	5	53	7	73	6	63	8	83	9	95
Buckwheat	2	10	3	33	5	47	5	47	7	67	9	95
Squash	3	33	5	53	5	47	7	67	8	77	10	100
Oats	4	37	6	57	8	77	6	63	9	92	9	95
Cowpeas	3	33	4	40	4	43	2	0	4	20	6	63
Red clover	10	100	10	100	10	100	10	100	10	100	10	100
Alfalfa	9	90	9	95	9	95	7	73	9	92	9	95
Lespedeza	9	90	10	100	10	100	9	95	10	100	10	100
White clover	10	100	10	100	10	100	10	100	10	100	10	100
B-ft. trefoil	10	100	10	100	10	100	10	100	10	100	10	100
Crop Tox. Av.	5	53	7	69	7	72	6	57	7	70	8	82
Weeds:												
Crabgrass	6	63	9	95	9	95	7	73	9	95	10	100
Ryegrass	7	70	9	95	9	95	4	43	9	95	9	95
Pigweed	2	23	6	60	9	95	6	63	9	92	10	100
Mustard	10	100	10	100	10	100	6	63	9	95	10	100
Lambsquarters	6	63	8	83	9	95	8	80	10	100	10	100
Grasses	6	63	9	92	9	95	7	73	9	95	10	100
Broadleaf	6	63	8	83	9	95	6	63	9	95	10	100
Weed Tox. Av.	6	64	8	87	9	96	6	65	9	95	10	100
Total Tox. Av.	5	55	7	72	8	77	6	59	8	75	8	86

Table 3 - The effect of 2-methoxy-4-diethylamino-6-isopropylamino-s-triazine as a pre-emergence spray on crops and weeds.

Crops	2-methoxy-4-diethylamino-6-isopropylamino-s-triazine							
	2 lb per acre		4 lb per acre		8 lb per acre		--- lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	6	63	9	90	10	100		
Cucumber	7	73	10	100	10	100		
Cotton	0	0	1	10	4	43		
Soybeans	0	0	2	20	8	77		
Sugar beets	10	100	10	100	10	100		
Flax	5	53	10	100	10	100	Not Applied	
Snapbeans	9	90	9	95	10	100		
Safflower	6	63	9	90	9	95		
Castorbeans	4	43	9	92	10	100		
Corn	1	0	2	10	3	13		
Peanuts	4	43	6	63	9	92		
Gladiolus	0	0	1	0	2	10		
Walnuts	2	17	4	23	5	23		
Pecans	2	17	4	23	5	23		
Chestnuts	2	17	4	23	5	23		
Sorghum	1	13	3	27	5	50		
Sudan grass	1	13	3	27	5	50		
Buckwheat	2	23	5	53	9	95		
Squash	4	43	5	47	10	100	Not Applied	
Oats	4	37	7	67	9	95		
Cowpeas	4	37	6	57	8	77		
Red clover	10	100	10	100	10	100		
Alfalfa	9	95	10	100	10	100		
Lespedeza	9	95	10	100	10	100		
White clover	10	100	10	100	10	100		
B-ft. trefoil	10	100	10	100	10	100		
Crop Tox. Av.	5	48	7	62	8	76		
<u>Weeds:</u>								
Crabgrass	9	90	9	95	9	95		
Ryegrass	9	90	9	95	10	100		
Pigweed	8	83	9	92	10	100		
Mustard	10	100	10	100	10	100	Not Applied	
Lambsquarters	9	95	10	100	10	100		
Grasses	6	63	8	83	9	95		
Broadleaf	8	80	9	92	10	100		
Weed Tox. Av.	8	86	9	94	10	99		
Total Tox. Av.	5	56	7	69	8	80		

Table 4 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-methoxy-4-isopropylamino-6-methylamino- <u>s</u> -triazine				2-methoxy-4-isopropylamino-6-ethylamino- <u>s</u> -triazine			
	4 lb per acre		8 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	10	100	10	100	10	100	10	100
Cucumber	10	100	10	100	10	100	10	100
Cotton	9	95	10	100	9	92	9	95
Soybeans	10	100	10	100	9	95	10	100
Sugar beets	10	100	10	100	10	100	10	100
Flax	10	100	10	100	10	100	10	100
Snapbeans	10	100	10	100	10	100	10	100
Safflower	9	92	10	100	9	92	10	100
Castorbeans	10	100	10	100	10	100	10	100
Corn	4	43	6	60	7	27	9	95
Peanuts	4	43	9	93	5	53	10	100
Gladiolus	3	0	4	0	3	3	5	20
Walnuts	10	100	10	100	10	100	10	100
Pecans	4	43	8	80	7	73	10	100
Chestnuts	10	100	10	100	10	100	10	100
Sorghum	6	60	9	95	9	95	10	100
Sudan grass	6	57	9	95	9	88	10	100
Buckwheat	7	73	9	95	10	100	10	100
Squash	10	100	10	100	10	100	10	100
Oats	9	95	10	100	10	100	10	100
Cowpeas	10	100	10	100	9	95	10	100
Red clover	10	100	10	100	10	100	10	100
Alfalfa	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100
White clover	10	100	10	100	10	100	10	100
B-ft. trefoil	10	100	10	100	10	100	10	100
Crop Tox. Av.	9	84	9	93	9	89	10	97
Weeds:								
Crabgrass	10	100	10	100	10	100	10	100
Ryegrass	8	83	9	95	9	93	9	95
Pigweed	10	100	10	100	9	95	10	100
Mustard	10	100	10	100	10	100	10	100
Lambsquarters	10	100	10	100	10	100	10	100
Grasses	9	87	9	95	9	95	10	100
Broadleaf	10	100	10	100	9	95	10	100
Weed Tox. Av.	10	96	10	99	9	97	10	99
Total Tox. Av.	9	87	9	94	9	91	10	97

Table 5 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-methoxy-4,6-bis(ethylamino)- s-triazine						2-methoxy-4,6-bis(isopropyl- amino)-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	8	77	9	90	9	95	10	100	10	100	10	100
Cucumber	10	100	10	100	10	100	10	100	10	100	10	100
Cotton	0	0	0	0	1	13	3	29	9	90	9	95
Soybeans	0	0	0	0	2	17	7	73	9	95	10	100
Sugar beets	10	100	10	100	10	100	10	100	10	100	10	100
Flax	6	63	8	83	9	95	9	95	10	100	10	100
Snapbeans	9	95	10	100	10	100	10	100	10	100	10	100
Safflower	7	60	8	77	9	87	8	83	9	95	10	100
Castorbeans	8	83	9	95	10	100	10	100	10	100	10	100
Corn	1	10	2	13	3	23	4	20	6	27	10	100
Peanuts	2	23	4	43	6	63	6	63	8	83	10	100
Gladiolus	0	0	0	0	2	10	3	10	4	13	7	20
Walnuts	2	17	3	27	8	77	2	10	3	20	5	33
Pecans	1	10	3	27	6	53	1	0	2	3	2	7
Chestnuts	2	17	3	27	5	53	10	100	10	100	10	100
Sorghum	1	13	3	27	8	77	7	70	9	88	10	100
Sudan grass	1	13	3	27	8	77	4	40	9	88	10	100
Buckwheat	2	23	3	33	9	92	9	95	10	100	10	100
Squash	2	17	4	43	10	100	10	100	10	100	10	100
Oats	4	37	7	70	10	100	9	95	10	100	10	100
Cowpeas	4	43	6	63	9	92	5	57	9	92	10	100
Red clover	10	100	10	100	10	100	10	100	10	100	10	100
Alfalfa	10	100	10	100	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100	10	100	10	100
White clover	10	100	10	100	10	100	10	100	10	100	10	100
B-ft. trefoil	10	100	10	100	10	100	10	100	10	100	10	100
Crop Tox. Av.	5	50	6	59	8	78	8	75	9	84	9	91
Weeds:												
Crabgrass	9	90	9	95	9	95	9	95	10	100	10	100
Ryegrass	9	90	9	95	9	95	7	73	9	92	10	100
Pigweed	9	90	9	95	10	100	10	100	10	100	10	100
Mustard	10	100	10	100	10	100	10	100	10	100	10	100
Lambsquarters	10	100	10	100	10	100	10	100	10	100	10	100
Grasses	8	80	9	90	9	95	9	90	9	95	10	100
Broadleaf	8	83	9	92	10	100	10	100	10	100	10	100
Weed Tox. Av.	9	90	9	95	10	98	9	94	10	98	10	100
Total Tox. Av.	6	59	7	67	8	82	8	79	9	87	9	93

Table 6 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-chloro-4-ethylamino-6-diethylamino-s-triazine						2-chloro-4-diethylamino-6-isopropylamino-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	10	100	10	100	10	100	10	100	10	100	10	100
Cucumber	10	100	10	100	10	100	10	100	10	100	10	100
Cotton	1	7	1	10	4	67	0	0	1	7	7	73
Soybeans	1	10	7	10	9	95	1	17	4	43	10	100
Sugar beets	10	100	10	100	10	100	10	100	10	100	10	100
Flax	10	100	10	100	10	100	9	93	9	95	10	100
Snapbeans	9	95	10	100	10	100	10	100	10	100	10	100
Safflower	10	100	10	100	10	100	10	100	10	100	10	100
Castorbeans	10	100	10	100	10	100	10	100	10	100	10	100
Corn	1	0	2	10	3	20	0	3	2	13	2	13
Peanuts	2	23	5	47	7	73	9	90	9	92	10	100
Gladiolus	0	0	0	0	1	7	1	0	2	0	3	13
Walnuts	10	100	10	100	10	100	0	0	10	100	10	100
Pecans	4	40	5	53	6	57	0	0	3	0	4	27
Chestnuts	3	27	5	47	6	63	10	100	10	100	10	100
Sorghum	1	7	2	17	4	40	1	3	2	17	2	23
Sudan grass	1	10	2	17	4	40	1	3	2	13	2	23
Buckwheat	10	100	10	100	10	100	10	100	10	100	10	100
Squash	10	100	10	100	10	100	10	100	10	100	10	100
Oats	10	100	10	100	10	100	10	100	10	100	10	100
Cowpeas	6	83	8	90	10	100	9	95	10	100	10	100
Red clover	10	100	10	100	10	100	10	100	10	100	10	100
Alfalfa	10	100	10	100	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100	10	100	10	100
White clover	10	100	10	100	10	100	10	100	10	100	10	100
B-ft. trefoil	10	100	10	100	10	100	10	100	10	100	10	100
Crop Tox. Av.	7	69	7	73	8	83	7	69	8	76	8	84
Weeds:												
Crabgrass	9	90	9	95	9	95	8	80	9	92	10	100
Ryegrass	10	100	10	100	10	100	7	73	9	92	10	100
Pigweed	10	100	10	100	10	100	10	100	10	100	10	100
Mustard	9	95	9	95	10	100	10	100	10	100	10	100
Lambsquarters	10	100	10	100	10	100	10	100	10	100	10	100
Grasses	8	83	9	92	9	95	7	73	8	83	9	92
Broadleaf	9	95	9	95	10	100	6	63	8	83	10	100
Weed Tox. Av.	9	95	9	97	10	99	8	84	9	93	10	99
Total Tox. Av.	7	75	8	79	8	86	7	73	8	80	9	87

Table 7 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-chloro-4-n-propylamino-6-isopropylamino-s-triazine						2-chloro-4-isopropylamino-6-methylamino-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	3	33	5	53	8	77	10	100	10	100	10	100
Cucumber	7	73	10	100	10	100	10	100	10	100	10	100
Cotton	4	37	5	53	7	73	9	90	10	100	10	100
Soybeans	3	27	5	47	8	77	9	90	9	95	10	100
Sugar beets	10	100	10	100	10	100	10	100	10	100	10	100
Flax	4	40	6	63	9	92	10	100	10	100	10	100
Snapbeans	6	63	9	95	9	95	10	100	10	100	10	100
Safflower	5	53	9	92	9	95	9	95	10	100	10	100
Castorbeans	9	95	10	100	10	100	10	100	10	100	10	100
Corn	1	7	2	10	2	10	0	0	1	0	3	20
Peanuts	3	27	5	47	7	67	9	90	9	95	10	100
Gladiolus	0	0	0	0	0	0	0	0	2	3	4	20
Walnuts	7	73	10	100	10	100	0	0	2	10	4	33
Pecans	7	73	10	100	10	100	0	0	2	10	2	13
Chestnuts	10	100	10	100	10	100	0	0	2	10	4	33
Sorghum	1	7	1	13	2	17	0	0	0	0	3	27
Sudan grass	1	7	1	13	2	17	0	0	0	0	3	27
Buckwheat	9	92	10	100	10	100	9	95	10	100	10	100
Squash	8	77	9	95	10	100	10	100	10	100	10	100
Oats	2	20	5	43	7	73	10	100	10	100	10	100
Cowpeas	8	80	9	95	10	100	10	100	10	100	10	100
Red clover	9	92	10	100	10	100	10	100	10	100	10	100
Alfalfa	8	80	9	92	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100	10	100	10	100
White clover	9	92	10	100	10	100	10	100	10	100	10	100
B-ft. trefoil	10	100	10	100	10	100	10	100	10	100	10	100
Crop Tox. Av.	6	60	7	74	8	81	7	72	7	74	8	80
Weeds:												
Crabgrass	9	92	10	100	10	100	9	90	9	95	10	100
Ryegrass	7	73	9	92	10	100	9	93	9	95	10	100
Pigweed	9	90	9	95	10	100	10	100	10	100	10	100
Mustard	8	83	9	95	10	100	10	100	10	100	10	100
Lambsquarters	10	100	10	100	10	100	10	100	10	100	10	100
Grasses	9	90	9	95	10	100	7	70	8	85	9	93
Broadleaf	8	83	9	90	9	92	9	93	9	95	10	100
Weed Tox. Av.	9	87	9	95	10	99	9	92	9	96	10	99
Total Tox. Av.	6	65	8	78	9	84	8	76	8	79	9	84

Table 8 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-chloro-4-isopropylamino-6-ethylamino-s-triazine						2-chloro-4,6-bis(ethylamino)-s-triazine (simazin)					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	10	100	10	100	10	100	10	100	10	100	10	100
Cucumber	10	100	10	100	10	100	10	100	10	100	10	100
Cotton	10	100	10	100	10	100	2	20	6	57	9	95
Soybeans	10	100	10	100	10	100	4	43	10	100	10	100
Sugar beets	10	100	10	100	10	100	10	100	10	100	10	100
Flax	10	100	10	100	10	100	10	100	10	100	10	100
Snapbeans	10	100	10	100	10	100	10	100	10	100	10	100
Safflower	10	100	10	100	10	100	10	100	10	100	10	100
Castorbeans	10	100	10	100	10	100	10	100	10	100	10	100
Corn	2	10	2	10	3	27	0	0	1	10	3	20
Peanuts	10	100	10	100	10	100	7	80	9	95	10	100
Gladiolus	1	0	2	0	4	10	1	0	2	0	3	0
Walnuts	10	100	10	100	10	100	1	0	2	0	3	23
Pecans	0	0	0	0	2	17	1	0	3	0	4	50
Chestnuts	10	100	10	100	10	100	10	100	10	100	10	100
Sorghum	2	3	2	20	4	37	3	33	6	60	9	95
Sudan grass	2	3	2	20	4	40	5	47	8	77	9	95
Buckwheat	10	100	10	100	10	100	10	100	10	100	10	100
Squash	10	100	10	100	10	100	10	100	10	100	10	100
Oats	10	100	10	100	10	100	10	100	10	100	10	100
Cowpeas	10	100	10	100	10	100	10	100	10	100	10	100
Red clover	10	100	10	100	10	100	10	100	10	100	10	100
Alfalfa	10	100	10	100	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100	10	100	10	100
White clover	10	100	10	100	10	100	10	100	10	100	10	100
B-ft. trefoil	10	100	10	100	10	100	10	100	10	100	10	100
Crop Tox. Av.	8	81	8	86	9	89	7	74	8	81	9	88
<u>Weeds:</u>												
Crabgrass	9	93	9	95	9	95	9	95	10	100	10	100
Ryegrass	9	95	10	100	10	100	9	95	10	100	10	100
Pigweed	10	100	10	100	10	100	10	100	10	100	10	100
Mustard	10	100	10	100	10	100	10	100	10	100	10	100
Lambsquarters	10	100	10	100	10	100	10	100	10	100	10	100
Grasses	8	77	9	87	9	95	9	90	9	95	10	100
Broadleaf	9	95	10	100	10	100	9	92	10	100	10	100
Weed Tox. Av.	9	94	10	97	10	99	9	96	10	99	10	100
Total Tox. Av.	9	84	9	89	9	91	8	79	9	85	9	90

Table 9 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-chloro-4,6-bis(diethylamino)-s-triazine (CDT)						2-chloro-4,6-bis(isopropylamino)-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	3	27	6	57	10	100	10	100	10	100	10	100
Cucumber	10	100	10	100	10	100	10	100	10	100	10	100
Cotton	0	0	0	0	2	17	0	0	2	10	6	73
Soybeans	0	0	2	23	5	47	9	95	10	100	10	100
Sugar beets	10	100	10	100	10	100	10	100	10	100	10	100
Flax	10	100	10	100	10	100	9	90	9	95	10	100
Snapbeans	9	90	9	95	10	100	10	100	10	100	10	100
Safflower	9	92	10	100	10	100	10	100	10	100	10	100
Castorbeans	1	13	5	50	10	100	10	100	10	100	10	100
Corn	1	10	2	20	3	20	1	10	2	10	2	17
Peanuts	3	27	6	57	9	92	9	92	10	100	10	100
Gladiolus	0	0	3	3	5	10	0	0	2	3	4	13
Walnuts	2	10	3	27	5	40	2	10	3	13	4	13
Pecans	1	10	2	13	5	37	2	10	3	13	4	13
Chestnuts	1	10	2	20	10	100	3	20	4	37	6	63
Sorghum	2	23	4	43	5	53	0	3	1	7	3	30
Sudan grass	2	23	4	43	7	70	0	3	1	7	2	23
Buckwheat	5	53	8	83	10	100	10	100	10	100	10	100
Squash	6	67	10	100	10	100	10	100	10	100	10	100
Oats	9	90	9	95	10	100	10	100	10	100	10	100
Cowpeas	3	20	3	30	9	93	10	100	10	100	10	100
Red clover	10	100	10	100	10	100	10	100	10	100	10	100
Alfalfa	10	100	10	100	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100	10	100	10	100
White clover	10	100	10	100	10	100	10	100	10	100	10	100
B-ft. trefoil	10	100	10	100	10	100	10	100	10	100	10	100
Crop Tox. Av.	5	53	6	64	8	80	7	71	8	73	8	79
<u>Weeds:</u>												
Crabgrass	4	37	6	57	8	83	9	93	9	95	9	95
Ryegrass	10	100	10	100	10	100	9	93	10	100	10	100
Pigweed	9	90	9	95	10	100	10	100	10	100	10	100
Mustard	10	100	10	100	10	100	10	100	10	100	10	100
Lambsquarters	10	100	10	100	10	100	10	100	10	100	10	100
Grasses	2	17	5	47	8	83	8	80	9	90	9	95
Broadleaf	9	90	9	92	10	100	9	95	10	100	10	100
Weed Tox. Av.	8	76	8	84	9	94	9	94	10	98	10	99
Total Tox. Av.	6	58	7	68	9	83	8	76	8	78	8	83

Table 10- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	4-chloro-2-butynyl N-(3-chlorophenyl)carbamate				isopropyl N-(3-chlorophenyl)carbamate (CIPC)			
	4 lb per acre		8 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	1	10	2	20	7	70	8	80
Cucumber	1	10	5	50	10	100	10	100
Cotton	1	10	2	20	6	60	8	80
Soybeans	0	0	0	0	2	20	3	23
Sugar beets	1	10	3	30	9	90	9	95
Flax	5	50	8	80	10	100	10	100
Snapbeans	0	0	0	0	4	40	6	60
Safflower	2	20	5	40	4	40	5	50
Castorbeans	9	90	9	95	1	10	4	40
Corn	2	10	3	10	5	70	6	63
Peanuts	0	0	2	10	4	40	6	60
Gladiolus	0	0	1	0	1	0	2	10
Walnuts	0	0	1	0	2	0	5	50
Pecans	0	0	0	0	3	20	5	37
Chestnuts	4	40	7	70	3	30	6	60
Sorghum	2	20	3	30	9	93	9	95
Sudan grass	1	10	2	20	9	95	9	95
Buckwheat	8	80	10	100	10	100	10	100
Squash	5	50	6	60	2	10	3	30
Oats	4	40	6	60	9	95	9	95
Cowpeas	4	40	6	60	3	30	5	37
Red clover	3	30	4	40	7	70	9	90
Alfalfa	2	20	4	40	7	70	9	90
Lespedeza	0	0	3	30	5	50	9	90
White clover	7	70	8	80	6	60	9	90
B-ft. trefoil	3	30	4	40	7	70	9	90
Crop Tox. Av.	2	26	4	38	6	55	7	70
Weeds:								
Crabgrass	1	10	2	20	6	60	8	80
Ryegrass	8	80	9	95	10	100	10	100
Pigweed	0	0	0	0	6	60	8	80
Mustard	0	0	4	40	10	100	10	100
Lambsquarters	0	0	0	0	7	70	9	90
Grasses	1	10	2	20	7	70	9	87
Broadleaf	0	0	0	0	5	50	7	70
Weed Tox. Av.	1	16	2	25	7	73	9	87
Total Tox. Av.	2	21	3	35	6	59	7	73

Table 11.- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	ethyl N,N-di-n-propylthiol-carbamate (EPTC)						2-chloroallyl diethyldithio-carbamate (CDEC)					
	4 lb per acre		8 lb per acre		16 lb per acre		4 lb per acre		8 lb per acre		--- lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	7	70	9	90	9	95	4	37	6	57	Not Applied	
Cucumber	7	67	10	100	10	100	3	27	4	30		
Cotton	7	67	9	95	9	95	5	47	7	63		
Soybeans	4	40	5	50	6	60	3	30	6	53		
Sugar beets	4	40	6	60	7	70	5	40	7	50		
Flax	3	30	4	40	7	70	2	17	4	37		
Snapbeans	4	33	4	40	5	50	3	20	4	37		
Safflower	2	20	3	30	4	40	4	40	6	53		
Castorbeans	9	95	9	95	9	95	6	57	7	67		
Corn	4	33	4	40	5	60	4	40	6	57		
Peanuts	2	20	4	40	6	60	2	13	3	20		
Gladiolus	1	10	3	30	6	60	1	7	3	20		
Walnuts	1	17	4	37	6	60	2	23	4	37		
Pecans	2	20	4	40	6	60	4	40	6	57		
Chestnuts	10	100	10	100	10	100	7	73	10	100		
Sorghum	9	95	9	95	10	100	9	95	10	100		
Sudan grass	9	95	10	100	10	100	9	95	10	100		
Buckwheat	4	40	6	57	8	80	3	30	6	57		
Squash	4	47	6	63	6	63	4	37	6	57		
Oats	10	100	10	100	10	100	3	33	6	57		
Cowpeas	4	37	5	53	10	100	3	30	5	50		
Red clover	0	0	1	10	2	20	0	3	4	37		
Alfalfa	2	20	3	30	4	40	4	37	7	67		
Lespedeza	1	10	1	10	5	50	2	17	4	37		
White clover	1	10	2	20	3	30	6	60	9	87		
B-ft. trefoil	0	0	1	10	2	20	0	3	4	37		
Crop Tox. Av.	4	43	5	55	7	68	4	37	6	55		
Weeds:												
Crabgrass	6	60	9	90	9	93	2	23	3	30	Not Applied	
Ryegrass	10	100	10	100	10	100	5	50	8	77		
Pigweed	4	40	7	67	9	90	7	73	9	90		
Mustard	3	30	7	70	9	90	0	0	0	0		
Lambsquarters	7	67	9	90	9	93	7	67	9	87		
Grasses	5	50	9	90	9	90	2	23	4	37		
Broadleaf	5	50	7	70	8	80	7	73	9	90		
Weed Tox. Av.	6	57	8	82	8	91	4	44	6	60		
Total Tox. Av.	5	46	6	61	7	73	4	38	6	56		

Table 12- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-methoxy-3,5,6-trichloro-benzoic acid						monoethanolamine salt of poly-chlorobenzoic acid					
	1 lb per acre		2 lb per acre		4 lb per acre		1 lb per acre		2 lb per acre		4 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	3	27	5	47	10	100	4	37	6	57	9	92
Cucumber	9	92	10	100	10	100	3	30	5	50	9	92
Cotton	3	27	5	47	8	77	3	33	4	43	9	92
Soybeans	5	47	7	67	9	92	4	30	5	47	9	92
Sugar beets	4	40	7	67	10	100	8	83	9	92	10	100
Flax	4	37	6	60	8	77	4	37	6	57	8	77
Snapbeans	3	27	4	43	9	95	7	73	9	92	9	95
Safflower	9	92	9	95	10	100	6	57	8	77	9	92
Castorbeans	2	10	3	20	4	57	4	43	6	57	7	73
Corn	0	0	0	0	0	0	3	10	3	17	3	23
Peanuts	2	23	4	43	9	92	2	23	3	37	8	77
Gladiolus	0	0	0	0	3	0	0	0	1	0	3	0
Walnuts	10	100	10	100	10	100	3	20	5	40	6	60
Pecans	2	20	4	40	6	60	3	20	5	40	6	60
Chestnuts	2	20	4	40	6	60	2	20	4	40	7	70
Sorghum	0	0	0	0	2	17	3	27	4	40	5	50
Sudan grass	0	0	0	0	2	17	2	17	3	27	4	43
Buckwheat	2	20	4	37	6	57	2	10	2	20	3	33
Squash	4	37	8	77	10	100	4	37	6	57	9	90
Oats	2	23	4	43	6	63	2	23	3	33	5	53
Cowpeas	3	33	6	63	10	100	5	53	6	63	8	80
Red clover	9	90	9	95	10	100	6	63	8	83	10	100
Alfalfa	10	100	10	100	10	100	8	80	9	90	9	95
Lespedeza	4	37	7	73	10	100	7	73	9	92	10	100
White clover	9	95	10	100	10	100	9	95	9	95	10	100
B-ft. trefoil	2	23	4	43	9	92	4	43	6	57	9	92
Crop Tox. Av.	4	39	5	53	8	75	4	40	6	54	7	74
Weeds:												
Crabgrass	0	0	0	0	5	53	1	7	1	10	3	27
Ryegrass	0	0	0	0	0	0	0	0	0	0	0	0
Pigweed	2	23	5	53	9	92	3	27	4	43	8	77
Mustard	4	43	7	70	9	92	0	0	0	0	3	27
Lambsquarters	2	23	5	53	9	92	4	43	6	63	9	92
Grasses	0	0	0	0	0	33	1	7	1	10	3	27
Broadleaf	2	23	5	53	9	92	3	27	4	43	8	77
Weed Tox. Av.	1	16	3	33	6	65	2	16	2	24	5	47
Total Tox. Av.	3	37	5	48	7	73	4	35	5	48	7	68

Table 13- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	diethanolamine salt of poly-chlorobenzoic acid						triethanolamine salt of poly-chlorobenzoic acid					
	1 lb per acre		2 lb per acre		4 lb per acre		1 lb per acre		2 lb per acre		4 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	2	23	4	43	7	67	2	23	4	43	7	67
Cucumber	3	27	4	43	7	70	2	23	4	43	6	60
Cotton	3	27	4	43	7	67	2	23	3	33	5	53
Soybeans	4	43	6	57	9	92	2	17	3	27	7	67
Sugar beets	6	57	9	92	10	100	6	60	9	90	9	92
Flax	3	27	5	47	7	67	2	23	4	43	6	57
Snapbeans	5	50	7	67	10	100	5	53	7	73	9	92
Safflower	4	37	6	57	8	77	3	27	5	47	9	92
Castorbeans	4	37	6	57	8	77	4	37	6	57	8	77
Corn	1	7	3	13	4	17	3	20	4	30	5	30
Peanuts	2	23	4	43	8	80	2	23	4	43	6	63
Glediolus	0	0	2	10	3	13	1	0	2	10	3	10
Walnuts	2	20	6	60	10	100	2	20	4	40	6	60
Pecans	2	20	6	60	10	100	2	20	4	40	6	60
Chestnuts	2	20	6	60	10	100	2	20	4	40	10	100
Sorghum	2	17	4	37	6	50	1	10	2	23	3	20
Sudan grass	2	17	4	37	6	47	1	10	2	23	3	20
Buckwheat	2	23	3	33	5	53	1	10	2	13	2	20
Squash	4	37	6	57	8	80	4	37	6	57	8	77
Oats	3	27	6	57	8	80	3	33	6	57	8	77
Cowpeas	4	37	5	47	8	77	4	43	5	50	9	92
Red clover	5	53	6	57	8	77	9	90	6	63	10	100
Alfalfa	4	43	7	73	10	100	4	43	9	95	10	100
Lespedeza	7	73	7	67	8	77	9	90	6	63	9	92
White clover	6	60	9	92	10	100	9	93	9	92	10	100
B-ft. trefoil	5	53	8	80	10	100	9	90	9	95	10	100
			7	73	9	92			9	95	9	95
Crop Tox. Av.	3	33	6	54	8	76	4	36	5	53	7	68
Weeds:												
Crabgrass	0	0	0	0	2	17	0	0	0	0	0	0
Ryegrass	0	0	1	7	2	17	0	0	0	0	0	0
Pigweed	4	43	6	63	9	92	2	23	4	37	7	73
Mustard	2	10	2	13	3	23	1	10	2	13	3	23
Lambsquarters	4	37	6	63	8	83	3	30	5	50	7	73
Grasses	0	0	0	0	0	0	0	0	0	0	0	0
Broadleaf	4	37	6	63	8	83	3	30	5	50	7	73
Weed Tox. Av.	2	18	3	30	5	45	1	13	2	22	3	35
Total Tox. Av.	3	30	5	49	7	70	3	31	5	45	6	61

Table 14 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	sodium salt of polychloro-benzoic acid						potassium salt of polychloro-benzoic acid					
	1 lb per acre		2 lb per acre		4 lb per acre		1 lb per acre		2 lb per acre		4 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	7	67	8	83	10	100	4	37	5	47	6	57
Cucumber	7	73	10	100	10	100	4	37	9	92	10	100
Cotton	7	73	9	95	9	95	4	37	5	53	7	73
Soybeans	7	73	9	95	9	95	6	63	7	73	9	92
Sugar beets	9	95	10	100	10	100	9	95	10	100	10	100
Flax	6	57	8	77	9	93	4	43	5	53	7	70
Snapbeans	9	92	9	95	9	95	9	95	9	95	9	95
Safflower	8	83	9	95	10	100	6	60	7	67	9	92
Castorbeans	4	37	6	57	6	63	6	67	7	73	9	92
Corn	2	10	2	10	3	27	1	0	2	17	2	27
Peanuts	7	53	9	73	10	100	4	43	7	67	9	92
Gladiolus	0	0	1	7	3	27	0	0	1	0	2	10
Walnuts	7	67	10	100	10	100	3	33	7	73	10	100
Pecans	10	100	10	100	10	100	3	33	7	73	10	100
Chestnuts	9	95	9	95	9	95	6	63	9	95	10	100
Sorghum	2	20	4	37	6	57	2	0	2	17	4	37
Sudan grass	2	20	4	37	6	57	2	0	2	17	3	27
Buckwheat	3	27	4	37	6	57	1	7	2	17	3	27
Squash	4	37	7	67	9	95	6	57	8	77	9	92
Oats	4	37	6	60	9	92	2	17	3	27	4	37
Cowpeas	6	57	7	67	9	92	7	73	8	83	9	92
Red clover	9	95	9	95	10	100	9	95	10	100	10	100
Alfalfa	9	95	10	100	10	100	7	73	9	90	9	95
Lespedeza	10	100	10	100	10	100	9	92	10	100	10	100
White clover	9	95	10	100	10	100	9	95	10	100	10	100
B-ft. trefoil	10	100	10	100	10	100	9	92	9	95	9	95
Crop Tox. Av.	6	61	8	76	9	85	5	50	7	65	8	77
Weeds:												
Crabgrass	1	13	6	63	9	92	3	20	4	37	6	57
Ryegrass	0	0	0	0	0	0	0	0	0	0	0	0
Pigweed	8	83	9	92	10	100	5	47	7	67	9	92
Mustard	3	27	6	57	8	77	1	7	1	10	2	20
Lambsquarters	8	83	9	92	10	100	5	47	7	67	9	92
Grasses	2	17	4	37	6	57	1	7	2	17	3	27
Broadleaf	8	83	9	92	9	95	5	47	7	67	9	92
Weed Tox. Av.	4	44	6	62	7	74	3	25	4	38	5	54
Total Tox. Av.	6	57	7	73	8	82	5	45	6	60	7	72

Table 15- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-methoxy-3,6-dichlorobenzoic acid						sodium salt of 2,3,6-tri-chlorobenzoic acid					
	1 lb per acre		2 lb per acre		4 lb per acre		1 lb per acre		2 lb per acre		4 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	10	100	10	100	10	100	10	100	10	100	10	100
Cucumber	10	100	10	100	10	100	10	100	10	100	10	100
Cotton	7	73	9	90	9	95	6	60	8	80	9	95
Soybeans	7	73	9	90	10	100	10	100	10	100	10	100
Sugar beets	7	73	9	90	10	100	10	100	10	100	10	100
Flax	5	50	7	72	9	95	7	70	9	90	9	95
Snapbeans	9	90	10	100	10	100	8	80	10	100	10	100
Safflower	10	100	10	100	10	100	8	80	10	100	10	100
Castorbeans	4	43	9	90	10	100	5	50	9	90	9	95
Corn	2	0	4	20	4	30	0	0	1	10	2	10
Peanuts	7	73	9	90	9	95	9	90	9	95	10	100
Gladiolus	0	0	1	10	2	10	0	0	0	0	2	3
Walnuts	0	0	0	0	0	0	2	20	4	30	7	40
Pecans	0	0	0	0	0	0	2	20	4	30	7	40
Chestnuts	0	0	0	0	4	40	10	100	10	100	10	100
Sorghum	1	13	3	33	8	80	2	20	8	80	9	95
Sudan grass	1	13	3	33	8	80	2	20	8	80	9	95
Buckwheat	9	90	9	95	9	95	3	30	7	70	9	95
Squash	8	83	9	92	10	100	9	95	9	95	10	100
Oats	3	27	6	57	9	95	6	60	9	95	9	95
Cowpeas	4	43	9	90	10	100	9	90	9	95	9	95
Red clover	9	95	9	95	9	95	10	100	10	100	10	100
Alfalfa	10	100	10	100	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100	10	100	10	100
White clover	9	90	9	95	9	95	10	100	10	100	10	100
B-ft. trefoil	9	95	9	95	9	95	9	95	9	95	10	100
Crop Tox. Av.	6	59	7	71	8	81	7	68	8	82	9	87
<u>Weeds:</u>												
Crabgrass	0	0	2	20	8	80	3	30	6	60	9	90
Ryegrass	0	0	2	10	2	20	0	0	3	30	4	40
Pigweed	8	77	9	90	9	95	10	100	10	100	10	100
Mustard	9	90	9	95	9	95	9	90	9	95	9	95
Lambsquarters	9	95	10	100	10	100	10	100	10	100	10	100
Grasses	3	30	5	50	7	70	2	20	4	40	9	90
Broadleaf	9	95	9	95	7	70	6	60	9	90	9	95
Weed Tox. Av.	5	55	7	66	7	76	6	57	7	74	9	87
Total Tox. Av.	6	58	7	77	8	80	7	66	8	80	9	87

Table 16- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2,3,5-trichlorobenzoic acid						2-methoxy-3,5-dichlorobenzoic acid					
	1 lb per acre		2 lb per acre		4 lb per acre		1 lb per acre		2 lb per acre		4 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	1	10	2	23	3	33	0	3	1	7	3	33
Cucumber	3	30	7	67	9	90	0	0	1	10	3	33
Cotton	1	10	3	33	5	53	0	0	2	10	4	40
Soybeans	0	0	3	33	7	73	0	0	2	17	3	33
Sugar beets	3	33	7	73	10	100	1	10	1	13	3	33
Flax	2	23	5	50	8	83	0	0	0	0	4	40
Snapbeans	3	33	5	53	8	83	0	0	0	0	3	30
Safflower	5	53	9	90	10	100	1	10	2	20	3	30
Castorbeans	2	13	3	13	4	40	0	0	0	0	1	13
Corn	3	10	5	20	6	60	1	7	2	10	3	10
Peanuts	2	20	3	33	5	50	0	0	0	0	0	0
Gladiolus	0	0	0	0	1	13	0	0	0	0	0	0
Walnuts	0	0	0	0	10	100	0	0	0	0	0	0
Pecans	0	0	0	0	9	90	0	0	0	0	0	0
Chestnuts	3	30	6	60	10	100	0	0	0	0	0	0
Sorghum	0	0	2	13	2	20	0	0	0	0	0	0
Sudan grass	0	0	2	13	2	20	0	0	0	0	0	0
Buckwheat	0	0	1	13	3	30	0	0	2	20	4	37
Squash	2	23	3	33	6	60	0	0	0	0	2	23
Oats	4	40	6	60	7	70	0	0	0	0	2	23
Cowpeas	3	13	5	43	5	43	0	0	0	0	1	13
Red clover	5	53	9	90	10	100	4	37	6	57	8	80
Alfalfa	4	43	6	63	10	100	4	37	6	57	9	87
Lespedeza	5	53	9	90	9	95	4	37	6	57	9	90
White clover	5	53	9	90	10	100	4	37	6	57	7	73
B-ft. trefoil	5	53	6	63	9	90	4	37	6	57	7	73
Crop Tox. Av.	2	23	4	43	7	69	1	9	2	17	3	35
Weeds:												
Crabgrass	0	0	0	0	0	0	0	0	0	0	0	0
Ryegrass	0	0	0	0	0	0	0	0	0	0	0	0
Pigweed	6	60	8	80	10	100	0	0	0	0	2	17
Mustard	6	60	8	80	10	100	3	27	7	67	9	90
Lambsquarters	6	60	8	80	9	95	0	0	0	0	2	17
Grasses	0	0	0	0	0	0	0	0	0	0	0	0
Broadleaf	6	60	8	80	9	90	0	0	0	0	2	17
Weed Tox. Av.	3	34	5	46	5	55	0	4	1	10	2	20
Total Tox. Av.	3	25	4	44	7	66	1	8	2	15	3	31

Table 17- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2,3,6-trichlorophenyl-acetamide						2,3,6-trichlorobenzoic acid-L-leucine					
	1 lb		2 lb		4 lb		1 lb		2 lb		4 lb	
	per acre		per acre		per acre		per acre		per acre		per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	8	80	9	90	9	95	0	0	0	0	4	40
Cucumber	10	100	10	100	10	100	1	0	1	10	4	40
Cotton	9	93	9	95	9	95	1	0	1	10	2	23
Soybeans	10	100	10	100	10	100	4	20	4	30	5	43
Sugar beets	9	95	10	100	10	100	2	20	3	33	5	50
Flax	8	80	9	90	9	95	1	10	2	30	3	33
Snapbeans	9	95	10	100	10	100	4	40	6	60	8	80
Safflower	9	90	9	95	9	95	2	20	4	40	6	40
Castorbeans	9	95	10	100	10	100	0	0	0	0	0	0
Corn	3	0	9	0	5	10	2	10	3	20	3	13
Peanuts	9	93	9	95	9	95	3	10	3	13	4	10
Gladiolus	2	10	3	20	4	23	0	0	0	0	0	0
Walnuts	10	100	10	100	10	100	0	0	0	0	0	0
Pecans	10	100	10	100	10	100	0	0	0	0	0	0
Chestnuts	10	100	10	100	10	100	0	0	0	0	0	0
Sorghum	4	37	5	53	8	77	0	0	0	0	0	0
Sudan grass	3	33	5	53	8	77	0	0	0	0	0	0
Buckwheat	4	37	6	57	8	77	0	0	0	0	2	10
Squash	10	100	10	100	10	100	0	0	0	0	3	23
Oats	3	33	5	53	9	88	0	0	0	0	2	10
Cowpeas	9	93	9	95	10	100	1	10	2	23	3	33
Red clover	10	100	10	100	10	100	0	0	0	0	2	23
Alfalfa	10	100	10	100	10	100	3	30	5	50	7	73
Lespedeza	10	100	10	100	10	100	2	20	3	30	5	53
White clover	10	100	10	100	10	100	0	0	0	0	2	23
B-ft. trefoil	10	100	10	100	10	100	0	0	0	0	2	23
Crop Tox. Av.	8	79	9	85	9	90	1	7	1	13	3	25
<u>Weeds:</u>												
Crabgrass	9	90	9	95	10	100	0	0	0	0	0	0
Ryegrass	8	77	9	90	9	95	0	0	0	0	0	0
Pigweed	8	77	9	90	9	95	0	0	0	0	5	50
Mustard	0	3	2	20	4	37	1	20	2	30	5	50
Lambsquarters	8	77	9	90	9	95	4	10	4	40	6	50
Grasses	9	90	9	93	9	95	0	0	0	0	0	0
Broadleaf	8	77	9	90	9	95	4	10	4	40	5	50
Weed Tox. Av.	7	70	8	81	8	87	1	6	1	16	3	29
Total Tox. Av.	8	77	8	84	9	89	1	7	1	14	3	26

Table 18 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2,5-dichloro-3-nitrobenzoic acid				1,2,4,5-tetrachlorobenzene			
	2 lb per acre		4 lb per acre		10 lb per acre		20 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	3	30	5	50	4	37	6	57
Cucumber	0	0	2	0	3	37	7	63
Cotton	0	0	3	33	5	53	8	80
Soybeans	0	0	3	33	7	73	9	92
Sugar beets	2	23	5	53	6	63	8	80
Flax	1	20	4	50	4	43	7	73
Snapbeans	3	13	5	53	8	73	9	93
Safflower	3	13	8	80	7	67	9	88
Castorbeans	0	0	0	0	7	73	9	92
Corn	2	20	3	27	5	13	6	20
Peanuts	2	0	3	10	2	17	4	37
Gladiolus	0	0	1	10	0	0	1	0
Walnuts	0	0	3	33	3	33	6	63
Pecans	0	0	0	0	3	33	6	63
Chestnuts	0	0	0	0	7	73	9	90
Sorghum	0	0	0	0	2	17	3	27
Sudan grass	0	0	0	0	4	37	6	57
Buckwheat	0	0	0	0	1	7	2	17
Squash	0	0	0	0	4	43	7	10
Oats	0	0	0	0	3	27	7	63
Cowpeas	0	0	3	23	3	37	7	70
Red clover	4	43	9	90	3	27	6	57
Alfalfa	2	13	6	60	7	73	9	92
Lespedeza	0	0	4	43	3	27	6	57
White clover	4	43	9	90	3	27	6	57
B-ft. trefoil	2	20	3	33	3	27	6	57
Crop Tox. Av. 1		9	3	30	4	40	7	62
<u>Weeds:</u>								
Crabgrass	4	40	6	60	6	57	6	60
Ryegrass	3	20	6	60	1	7	2	17
Pigweed	0	0	2	20	5	47	8	77
Mustard	2	20	4	40	0	0	1	10
Lambsquarters	0	0	3	30	5	47	8	77
Grasses	4	40	6	60	7	67	9	92
Broadleaf	0	0	4	40	5	47	8	77
Weed Tox. Av. 2		17	4	44	4	39	6	59
Total Tox. Av. 1		11	3	33	4	40	6	61

Table 19- The effect of 1,1'-ethylene-2,2'-dipyridylum dibromide as a pre-emergence spray on crops and weeds.

Crops	1,1'-ethylene-2,2'-dipyridylum dibromide											
	4 lb per acre		8 lb per acre		16 lb per acre		--- lb per acre		--- lb per acre		--- lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	0	0	1	13	3	23						
Cucumber	0	0	0	0	2	13						
Cotton	3	20	4	37	6	60						
Soybeans	0	0	0	0	0	0						
Sugar beets	3	27	5	47	7	60						
Flax	0	0	0	0	0	0						
Snapbeans	3	27	5	47	7	67						
Safflower	5	47	7	67	9	95						
Castorbeans	0	0	0	0	0	0						
Corn	3	20	4	30	4	47						
Peanuts	2	17	3	27	4	37						
Gladiolus	0	0	0	0	0	0						
Walnuts	0	0	0	0	0	0						
Pecans	0	0	0	0	0	0						
Chestnuts	0	0	0	0	0	0						
Sorghum	0	0	0	0	0	0						
Sudan grass	0	0	0	0	0	0						
Buckwheat	0	0	0	0	0	0						
Squash	0	0	0	0	0	0						
Oats	0	0	0	0	0	0						
Cowpeas	0	0	0	0	2	0						
Red clover	2	10	3	20	5	47						
Alfalfa	6	57	8	77	9	95						
Lespedeza	0	0	0	0	5	47						
White clover	2	10	3	27	5	47						
B-ft. trefoil	2	10	3	20	5	47						
Crop Tox. Av.	1	9	2	16	3	26						
Weeds:												
Crabgrass	0	0	1	13	3	20						
Ryegrass	6	57	8	77	9	92						
Pigweed	2	0	3	13	4	23						
Mustard	0	0	2	13	3	27						
Lambsquarters	0	0	0	0	0	0						
Grasses	0	0	1	7	3	20						
Broadleaf	0	0	0	0	0	0						
Weed Tox. Av.	1	8	2	18	3	26						
Total Tox. Av.	1	9	2	16	3	26						

Table 20- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	sodium salt of 2,2-dichloro-propionic acid (dalapon, sodium salt)				sodium salt of 2,3-dichloro-isobutyric acid			
	8 lb per acre		16 lb per acre		8 lb per acre		16 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	4	37	5	47	8	77	9	87
Cucumber	3	27	5	47	8	83	10	100
Cotton	3	27	6	53	7	67	8	83
Soybeans	4	37	7	63	7	70	9	90
Sugar beets	3	23	5	40	6	63	7	87
Flax	4	37	6	57	5	53	9	87
Snapbeans	4	37	5	50	6	57	8	77
Safflower	4	37	6	57	9	93	9	95
Castorbeans	2	23	4	40	9	88	9	95
Corn	9	87	9	93	9	92	9	95
Peanuts	1	13	4	37	7	73	9	90
Gladiolus	1	0	2	0	1	0	2	7
Walnuts	1	0	3	10	10	100	10	100
Pecans	1	0	3	10	3	27	5	47
Chestnuts	1	0	3	10	3	27	5	47
Sorghum	9	90	9	95	9	93	9	95
Sudan grass	9	95	10	100	9	93	9	95
Buckwheat	2	17	3	27	4	43	5	53
Squash	4	37	6	57	5	47	6	57
Oats	9	93	9	95	3	27	3	37
Cowpeas	5	53	8	77	6	63	8	83
Red clover	8	83	9	95	10	100	10	100
Alfalfa	8	83	9	95	9	93	9	95
Lespedeza	1	13	5	53	9	93	9	95
White clover	5	53	7	70	9	95	10	100
B-ft. trefoil	4	43	7	67	4	40	6	60
Crop Tox. Av.	4	40	6	56	7	68	8	79
Weeds:								
Crabgrass	1	10	2	17	9	93	9	95
Ryegrass	2	17	3	27	1	13	2	23
Pigweed	2	17	3	27	4	37	5	50
Mustard	1	00	1	0	0	0	0	0
Lambsquarters	2	17	3	27	3	27	4	43
Grasses	1	10	3	27	5	53	7	73
Broadleaf	2	17	3	27	4	37	5	50
Weed Tox. Av.	2	13	3	22	4	37	5	48
Total Tox. Av.	4	34	5	48	6	61	7	72

Table 21 - The effect of three chemicals as pre-emergence sprays on crops and weeds.

Crops	2-(2,4,5-T)ethanol ester of 2,4-D				propylene glycol butyl ether esters of 2,4,5-T				2-(2,4-D)ethanol ester of 2,4,5-T			
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	9	90	9	92	1	13	4	43	2	23	4	43
Cucumber	9	95	10	100	7	73	10	100	3	30	6	57
Cotton	8	77	9	93	3	27	4	43	4	43	7	73
Soybeans	6	60	9	93	0	0	1	7	2	23	7	70
Sugar beets	9	90	9	95	4	43	7	67	3	33	9	92
Flax	5	53	7	70	2	23	5	47	3	33	9	95
Snapbeans	6	53	8	80	1	10	4	37	2	23	5	50
Safflower	9	95	9	95	4	37	6	57	8	83	9	93
Castorbeans	9	95	9	95	0	0	4	37	0	0	4	43
Corn	2	10	4	23	2	10	2	23	3	20	3	33
Peanuts	3	30	9	92	2	17	4	37	4	43	8	80
Gladiolus	2	0	5	7	0	0	0	0	0	0	1	7
Walnuts	10	100	10	100	0	0	0	0	0	0	0	0
Pecans	3	27	9	90	0	0	0	0	0	0	0	0
Chestnuts	8	80	10	100	0	0	0	0	0	0	0	0
Sorghum	6	63	9	95	0	0	0	0	0	0	3	30
Sudan grass	7	70	9	90	0	0	4	37	0	0	6	57
Buckwheat	2	13	4	43	1	7	1	10	0	0	2	23
Squash	9	90	10	100	0	0	0	0	0	0	2	17
Oats	6	60	9	90	0	0	2	10	0	3	2	20
Cowpeas	5	47	8	70	0	0	0	0	4	37	6	57
Red clover	10	100	10	100	9	92	10	100	10	100	10	100
Alfalfa	10	100	10	100	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	9	95	10	100	10	100	10	100
White clover	10	100	10	100	9	92	10	100	10	100	10	100
B-ft. trefoil	9	95	10	100	9	92	10	100	10	100	10	100
Crop Tox. Av.	7	69	9	85	3	28	4	41	3	34	6	55
Weeds:												
Crabgrass	10	100	10	100	4	37	5	47	4	43	7	70
Ryegrass	2	23	4	43	2	17	4	37	0	0	0	0
Pigweed	7	70	9	92	0	0	1	10	0	0	5	47
Mustard	10	100	10	100	3	27	5	53	8	77	9	95
Lambsquarters	7	70	9	92	0	0	1	10	0	0	3	33
Grasses	8	83	9	93	2	17	4	37	4	43	7	70
Broadleaf	7	67	9	87	0	0	1	10	0	0	3	33
Weed Tox. Av.	7	73	9	87	2	14	3	29	2	23	5	50
Total Tox. Av.	7	70	9	85	3	25	4	38	3	32	5	54

Table 22 - The effect of n-butyl ester of 2-chloro-4-fluorophenoxyacetic acid as a pre-emergence spray on crops and weeds.

Crops	<u>n</u> -butyl ester of 2-chloro-4-fluorophenoxyacetic acid											
	1 lb per acre		2 lb per acre		4 lb per acre		--- lb per acre		--- lb per acre		--- lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	9	93	9	95	9	95						
Cucumber	9	95	10	100	10	100						
Cotton	9	95	10	100	10	100						
Soybeans	7	73	8	83	10	100						
Sugar beets	9	90	9	95	10	100						
Flax	8	83	9	95	9	95						
Snapbeans	5	53	8	83	10	100						
Safflower	9	90	9	95	10	100						
Castorbeans	9	90	9	92	10	100						
Corn	2	10	3	13	3	23						
Peanuts	4	37	6	57	8	77						
Gladiolus	1	0	2	0	3	0					Not	
Walnuts	2	17	3	27	5	47					Applied	
Pecans	2	17	3	27	5	47						
Chestnuts	2	17	3	27	5	47						
Sorghum	9	93	9	95	10	100						
Sudan grass	9	93	9	95	10	100						
Buckwheat	3	27	3	33	5	53						
Squash	7	73	10	100	10	100						
Oats	4	47	7	73	9	95						
Cowpeas	5	53	7	73	9	95					Not	
Red clover	7	70	8	83	9	95					Applied	
Alfalfa	10	100	10	100	10	100						
Lespedeza	10	100	10	100	10	100						
White clover	7	70	8	83	9	95						
B-ft. trefoil	7	70	8	83	9	95						
Crop Tox. Av.	6	64	7	76	8	83						
<u>Weeds:</u>												
Crabgrass	9	90	9	90	9	95						
Ryegrass	9	90	9	90	9	95						
Pigweed	9	90	9	90	9	95					Not	
Mustard	9	90	9	95	10	100					Applied	
Lambsquarters	9	90	9	90	9	95						
Grasses	8	83	9	90	9	95						
Broadleaf	9	90	9	90	9	95						
Weed Tox. Av.	9	89	9	91	9	96						
Total Tox. Av.	7	69	8	77	9	86						

Table 23- The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	Sta-amino A-2-(2,4-DP)-DL				Sta-amino B-2-(2,4-DP)-DL			
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	0	0	0	0				
Cucumber	0	0	0	0				
Cotton	0	0	0	0				
Soybeans	0	0	0	0				
Sugar beets	4	43	7	73				
Flax	0	0	0	0				
Snapbeans	0	0	0	0				
Safflower	1	17	3	30				
Castorbeans	0	0	5	50				
Corn	1	10	3	20				
Peanuts	0	0	0	0				
Gladiolus	0	0	0	0				
Walnuts	0	0	0	0				
Pecans	0	0	0	0				
Chestnuts	0	0	0	0				
Sorghum	0	0	2	23				
Sudan grass	2	17	4	43				
Buckwheat	0	0	0	0				
Squash	0	0	5	47				
Oats	0	0	0	0				
Cowpeas	0	0	0	0				
Red clover	8	77	9	92				
Alfalfa	10	100	10	100				
Lespedeza	6	57	9	88				
White clover	8	77	9	92				
B-ft. trefoil	8	77	9	92				
Crop Tox. Av.	2	18	3	29				
Weeds:								
Crabgrass	0	0	2	20				
Ryegrass	0	0	0	0				
Pigweed	0	0	0	0				
Mustard	3	30	5	53				
Lambsquarters	0	0	0	0				
Grasses	0	0	2	20				
Broadleaf	0	0	0	0				
Weed Tox. Av.	0	4	1	13				
Total Tox. Av.	2	13	3	26				

Relatively
InactiveRelatively
InactiveRelatively
Inactive

Table 24- The effect of three chemicals as pre-emergence sprays on crops and weeds.

Crops	N-2-(2,4-DP)- <u>DL</u> -phenylalanine				N-2-(2,4-DP)- <u>L</u> -methionine				N-2-(2,4-DP)- <u>L</u> -leucine			
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.

Lima beans
Cucumber
Cotton
Soybeans
Sugar beets
Flax
Snapbeans
Safflower
Castorbeans
Corn

Relatively
Inactive

Relatively
Inactive

Relatively
Inactive

Peanuts
Gladiolus
Walnuts
Pecans
Chestnuts
Sorghum
Sudan grass
Buckwheat
Squash
Oats
Cowpeas
Red clover
Alfalfa
Lespedeza
White clover
B-ft. trefoil

Relatively
Inactive

Relatively
Inactive

Relatively
Inactive

Crop Tox. Av.

Weeds:

Crabgrass
Ryegrass
Pigweed
Mustard
Lambsquarters
Grasses
Broadleaf

Relatively
Inactive

Relatively
Inactive

Relatively
Inactive

Weed Tox. Av.

Total Tox. Av.

Table 25 - The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	alkamolamine salt of 2-(2,4-DP)				propylene glycol butyl ether ester of 2-(2,4,5-TP) (silvex)			
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	0	0	1	13	2	10	4	37
Cucumber	0	0	2	17	1	10	4	33
Cotton	0	0	2	17	1	10	4	40
Soybeans	0	0	0	3	1	13	3	30
Sugar beets	2	17	5	53	8	77	10	100
Flax	2	23	5	50	6	63	9	95
Snapbeans	0	0	2	17	2	10	3	33
Safflower	4	43	6	60	6	57	7	67
Castorbeans	0	0	4	37	0	0	3	23
Corn	0	0	1	0	1	0	2	10
Peanuts	0	0	0	0	0	0	0	0
Gladiolus	0	0	0	0	0	0	0	0
Walnuts	0	0	0	0	10	100	10	100
Pecans	0	0	0	0	10	100	10	100
Chestnuts	0	0	0	0	10	100	10	100
Sorghum	0	0	0	0	1	10	3	30
Sudan grass	0	0	0	0	2	10	4	37
Buckwheat	0	0	0	0	0	0	0	0
Squash	0	0	0	0	0	0	2	23
Oats	0	0	0	0	0	0	1	3
Cowpeas	0	0	0	0	0	0	0	0
Red clover	8	77	9	92	9	90	9	95
Alfalfa	10	100	10	100	10	100	10	100
Lespedeza	8	83	10	100	10	100	10	100
White clover	8	77	9	92	9	90	9	95
B-ft. trefoil	8	77	9	92	9	90	9	95
Crop Tox. Av.	2	19	3	29	4	40	5	52
Weeds:								
Crabgrass	0	0	2	20	4	43	6	57
Ryegrass	0	0	0	0	3	33	6	57
Pigweed	0	0	0	0	0	0	2	20
Mustard	9	90	9	95	9	95	10	100
Lambsquarters	0	0	2	10	4	37	7	67
Grasses	0	0	2	17	3	27	5	47
Broadleaf	0	0	2	10	0	0	3	23
Weed Tox. Av.	1	13	2	22	3	34	6	53
Total Tox. Av.	2	18	3	27	4	39	5	52

Table 26-The effect of two chemicals as pre-emergence sprays on crops and weeds.

Crops	2-(2,4-D)ethanol ester of 4-(2,4-DB)						n-butyl ester of 4-(2-chloro-4- fluorophenoxy)butyric acid					
	1 lb per acre		2 lb per acre		--- lb per acre		1 lb per acre		2 lb per acre		4 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	9	93	9	95			2	17	4	37	8	77
Cucumber	9	95	10	100			2	17	4	37	8	77
Cotton	9	92	9	95			5	47	7	67	10	100
Soybeans	4	37	5	53			3	27	5	47	9	95
Sugar beets	3	37	8	82			2	10	6	57	10	100
Flax	3	33	6	60			2	23	5	50	9	95
Snapbeans	4	37	6	60			4	33	5	53	9	92
Safflower	4	37	6	57	Not Applied		4	37	6	57	8	77
Castorbeans	9	92	9	95			2	27	7	73	10	100
Corn	2	10	2	17			2	10	3	13	4	13
Peanuts	3	33	5	47			3	33	5	53	8	80
Gladiolus	1	0	3	0			0	0	2	0	3	0
Walnuts	10	100	10	100			2	17	3	27	4	37
Pecans	4	33	7	67			2	17	3	27	4	37
Chestnuts	10	100	10	100			2	17	3	27	4	37
Sorghum	9	95	9	95			7	73	8	83	10	100
Sudan grass	7	67	9	95			7	73	8	83	10	100
Buckwheat	2	10	5	50	Not Applied		2	17	4	37	6	50
Squash	4	40	9	92			4	37	6	57	8	77
Oats	6	63	9	95			4	37	6	57	8	77
Cowpeas	6	47	6	60			5	53	7	77	9	95
Red clover	9	95	10	100			6	57	8	77	9	95
Alfalfa	10	100	10	100			6	57	8	77	10	100
Lespedeza	9	95	9	95			10	100	10	100	10	100
White clover	9	92	9	95			6	57	8	77	9	95
B-ft. trefoil	9	95	10	100			6	57	8	77	9	95
Crop Tox. Av.	6	63	8	77			4	37	6	55	8	77
Weeds:												
Crabgrass	7	70	8	83			8	77	9	90	9	95
Ryegrass	3	30	6	57			4	43	6	63	9	92
Pigweed	8	80	9	95			2	23	6	63	9	92
Mustard	10	100	10	100			4	43	8	83	9	95
Lambsquarters	8	80	9	95	Not Applied		4	37	7	70	9	92
Grasses	7	70	9	92			4	43	6	63	9	92
Broadleaf	7	73	9	92			2	23	6	63	9	92
Weed Tox. Av.	7	72	9	88			4	41	7	71	9	93
Total Tox. Av.	6	65	8	79			4	38	6	58	8	80

Table 27- The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-methoxy-4-diethylamino-6-isopropylamino-s-triazine						2-methoxy-4-isopropylamino-6-methylamino-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	3	30	4	40	6	43	3	33	5	53	9	92
Cucumber	10	100	10	100	10	100	10	100	10	100	10	100
Cotton	2	17	3	20	5	40	2	17	4	37	7	70
Soybeans	8	77	9	92	10	100	9	93	9	95	10	100
Sugar beets	10	100	10	100	10	100	10	100	10	100	10	100
Flax	6	57	8	77	9	95	6	63	8	80	9	95
Snapbeans	8	80	9	93	10	100	9	95	10	100	10	100
Safflower	10	100	10	100	10	100	10	100	10	100	10	100
Castorbeans	10	100	10	100	10	100	10	100	10	100	10	100
Corn	3	20	4	23	7	70	0	3	3	27	5	47
Peanuts	2	13	4	13	6	13	1	10	3	20	6	60
Gladiolus	3	10	5	13	7	13	2	10	3	13	6	13
Chestnuts	-	-	-	-	-	-	-	-	-	-	-	-
Sorghum	3	30	5	43	7	70	1	7	2	20	6	57
Sudan grass	3	30	5	43	7	70	1	7	2	20	6	57
Buckwheat	5	47	7	67	9	92	4	37	6	57	9	92
Squash	9	92	10	100	10	100	9	95	10	100	10	100
Oats	4	40	5	53	8	80	4	37	4	40	7	67
Cowpeas	4	43	7	70	9	95	6	57	9	87	9	95
Red clover	7	73	9	92	10	100	9	93	9	95	10	100
Alfalfa	9	87	9	95	10	100	7	73	8	83	9	95
Lespedeza	7	73	9	92	10	100	9	90	9	95	10	100
White clover	7	73	9	92	10	100	9	93	9	95	10	100
B-ft. trefoil	7	73	9	92	10	100	9	93	9	95	10	100
Sansevieria	-	-	-	-	-	-	6	0	6	0	7	3
Crop Tox. Av.	6	59	7	70	9	79	6	59	7	67	9	81
Weeds:												
Crabgrass	0	0	0	0	2	20	1	10	3	27	7	67
Ryegrass	0	0	0	0	3	30	0	0	2	17	4	37
Pigweed	4	43	6	63	8	83	5	47	7	67	9	92
Mustard	4	40	6	60	8	83	3	30	5	53	9	92
Lambsquarters	4	43	6	63	8	83	5	47	7	67	9	92
Grasses	1	7	2	17	3	30	1	7	3	27	7	67
Broadleaf	4	43	6	63	8	83	5	47	7	67	9	92
Weed Tox. Av.	2	25	4	38	6	59	3	27	5	46	8	77
Total Tox. Av.	5	51	7	63	8	74	5	51	7	62	8	80

Table 28 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-methoxy-4-isopropylamino-6-ethylamino-s-triazine						2-methoxy-4,6-bis(ethylamino)-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	8	80	9	95	10	100	1	7	2	17	6	57
Cucumber	10	100	10	100	10	100	5	47	10	100	10	100
Cotton	3	27	4	37	5	47	2	17	2	20	2	23
Soybeans	10	100	10	100	10	100	10	100	10	100	10	100
Sugar beets	10	100	10	100	10	100	8	77	9	95	10	100
Flax	5	53	7	73	10	100	5	47	6	57	9	95
Snapbeans	9	93	9	95	10	100	6	57	8	77	9	95
Safflower	9	95	10	100	10	100	9	90	9	92	10	100
Castorbeans	10	100	10	100	10	100	10	100	10	100	10	100
Corn	3	27	5	53	8	77	2	17	3	27	5	47
Peanuts	2	17	6	57	9	92	0	0	3	33	6	57
Gladiolus	3	3	5	20	7	30	1	0	3	0	5	10
Chestnuts	-	-	-	-	-	-	0	0	0	0	7	73
Sorghum	5	50	7	73	9	95	3	27	5	47	8	77
Sudan grass	5	50	7	73	9	95	3	27	5	47	8	77
Buckwheat	6	63	8	83	10	100	3	33	6	57	9	92
Squash	9	95	10	100	10	100	2	23	7	67	10	100
Oats	4	43	6	63	9	95	5	47	7	67	9	95
Cowpeas	9	90	9	95	10	100	4	37	8	77	10	100
Red clover	9	95	10	100	10	100	8	77	9	90	10	100
Alfalfa	5	50	8	80	9	95	5	47	7	67	9	92
Lespedeza	9	92	10	100	10	100	4	37	7	67	9	95
White clover	10	100	10	100	10	100	8	77	9	90	10	100
B-ft tre refoil	9	95	10	100	10	100	8	80	9	90	10	100
Sansevieria	2	0	3	0	5	0	0	0	0	0	5	0
Crop Tox. Av.	7	67	8	79	9	89	4	43	6	59	8	79
Weeds:												
Crabgrass	0	0	7	70	9	95	0	0	2	10	4	37
Ryegrass	0	0	2	17	6	57	3	27	5	53	8	77
Pigweed	3	27	5	47	7	67	0	0	2	17	3	23
Mustard	5	50	7	70	9	95	2	17	4	43	8	77
Lambsquarters	3	27	7	67	7	67	1	7	2	17	3	30
Grasses	0	0	7	70	9	95	0	0	2	17	5	43
Broadleaf	3	27	7	67	9	95	1	7	2	17	3	30
Weed Tox. Av.	2	19	6	58	8	82	1	8	3	25	5	45
Total Tox. Av.	6	56	8	74	9	87	4	35	5	52	8	72

Table 29 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-methoxy-4,6-bis(isopropyl-amino)-s-triazine						2-chloro-4-ethylamino-6-diethyl-amino-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	0	0	3	27	6	57	0	0	2	17	8	77
Cucumber	10	100	10	100	10	100	9	95	10	100	10	100
Cotton	2	17	3	20	4	30	2	17	3	23	4	27
Soybeans	9	95	10	100	10	100	5	53	8	73	10	100
Sugar beets	8	83	9	95	10	100	7	73	9	95	10	100
Flax	7	67	8	80	9	95	5	50	7	70	9	95
Snapbeans	8	80	9	95	10	100	5	47	9	90	9	95
Safflower	7	70	9	93	10	100	9	95	10	100	10	100
Castorbeans	10	100	10	100	10	100	8	80	10	100	10	100
Corn	4	37	7	67	9	92	2	10	3	17	3	20
Peanuts	2	10	6	50	9	87	4	37	6	57	9	92
Gladiolus	2	0	3	7	7	17	0	0	0	0	2	10
Chestnuts	0	0	5	43	8	73	0	0	2	10	2	10
Sorghum	4	37	6	57	9	87	2	17	4	30	7	70
Sudan grass	4	37	6	57	9	87	2	17	4	30	7	70
Buckwheat	7	77	9	92	10	100	6	63	9	90	10	100
Squash	9	92	10	100	10	100	6	57	10	100	10	100
Oats	4	40	7	67	9	95	6	63	9	90	9	95
Cowpeas	3	23	8	77	9	95	6	63	8	83	9	95
Red clover	9	90	9	95	10	100	7	67	9	90	9	95
Alfalfa	3	33	6	63	9	92	5	47	7	67	10	100
Lespedeza	8	80	9	92	10	100	7	73	9	90	9	95
White clover	9	90	9	95	10	100	7	73	9	93	9	95
B-ft. trefoil	9	90	9	95	10	100	6	60	7	70	9	95
Sansevieria	0	0	0	0	4	0	0	0	0	0	3	0
Crop Tox. Av.	6	54	7	71	9	84	5	46	7	63	8	77
Weeds:												
Crabgrass	0	0	3	33	9	92	0	0	0	0	2	23
Ryegrass	2	17	4	37	6	57	4	37	5	50	7	73
Pigweed	1	7	4	37	4	43	0	0	2	13	4	33
Mustard	3	27	5	47	8	77	4	37	7	67	9	92
Lambsquarters	1	7	4	37	4	43	0	0	2	13	4	33
Grasses	0	0	3	30	9	92	0	0	0	0	3	23
Broadleaf	1	7	4	37	4	43	0	0	1	13	4	33
Weed Tox. Av.	1	9	4	37	6	64	1	11	2	22	5	44
Total Tox. Av.	5	44	6	63	8	80	4	38	6	54	7	70

Table 30 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-chloro-4-diethylamino-6-isopropylamino-s-triazine						2-chloro-4-n-propylamino-6-isopropylamino-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	8	77	9	95	10	100	0	3	2	17	5	47
Cucumber	10	100	10	100	10	100	7	73	10	100	10	100
Cotton	4	40	6	60	8	77	2	23	4	43	6	43
Soybeans	5	53	8	83	10	100	6	57	7	67	10	100
Sugar beets	8	77	9	95	10	100	9	90	9	92	9	95
Flax	6	57	8	77	9	92	6	60	7	73	9	95
Snapbeans	8	77	9	95	10	100	6	57	8	80	10	100
Safflower	10	100	10	100	10	100	10	100	10	100	10	100
Castorbeans	10	100	10	100	10	100	10	100	10	100	10	100
Corn	2	20	3	23	5	43	4	37	6	43	7	43
Peanuts	5	47	8	77	10	100	4	37	6	57	7	63
Gladiolus	2	0	4	0	6	23	2	0	3	10	7	23
Chestnuts	0	0	0	0	3	10	1	7	2	17	4	37
Sorghum	2	23	5	40	5	53	2	7	5	43	7	67
Sudan grass	2	23	5	40	5	53	2	7	5	43	7	67
Buckwheat	6	57	9	87	10	100	9	90	9	95	10	100
Squash	9	95	10	100	10	100	6	63	9	95	10	100
Oats	8	77	9	90	10	100	4	37	7	67	8	77
Cowpeas	6	63	9	90	10	100	7	67	8	77	9	95
Red clover	9	95	10	100	10	100	5	47	7	67	9	95
Alfalfa	9	92	10	100	10	100	6	60	9	90	9	95
Lespedeza	9	95	10	100	10	100	7	73	10	100	10	100
White clover	9	95	10	100	10	100	6	60	7	73	9	95
B-ft. trefoil	9	95	10	100	10	100	5	53	7	70	9	95
Sansevieria	0	0	0	0	4	3	0	0	0	0	3	0
Crop Tox. Av.	6	62	8	74	9	82	5	49	7	65	8	81
<u>Weeds:</u>												
Crabgrass	0	0	0	0	2	10	1	7	3	27	5	47
Ryegrass	2	17	4	37	5	50	0	0	2	17	5	47
Pigweed	4	37	6	57	9	92	1	10	2	20	4	43
Mustard	6	57	8	77	9	95	6	57	7	67	9	92
Lambsquarters	4	37	6	57	9	92	1	10	2	20	4	43
Grasses	0	0	0	0	2	10	1	7	3	27	4	40
Broadleaf	4	37	6	57	9	92	1	10	2	20	4	43
Weed Tox. Av.	3	26	4	41	6	63	2	14	3	28	5	51
Total Tox. Av.	6	54	7	67	8	78	4	42	6	57	7	75

Table 31- The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-chloro-4-isopropylamino-6-methylamino-s-triazine						2-chloro-4-isopropylamino-6-ethylamino-s-triazine					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	6	57	8	77	9	95	8	77	10	100	10	100
Cucumber	10	100	10	100	10	100	10	100	10	100	10	100
Cotton	4	37	6	57	8	77	2	17	6	57	10	100
Soybeans	7	70	9	95	10	100	10	100	10	100	10	100
Sugar beets	7	73	9	95	9	95	9	95	10	100	10	100
Flax	8	77	9	95	9	95	8	77	9	95	10	100
Snapbeans	7	70	9	92	10	100	8	77	10	100	10	100
Safflower	9	90	9	95	10	100	10	100	10	100	10	100
Castorbeans	10	100	10	100	10	100	10	100	10	100	10	100
Corn	1	0	2	0	4	0	2	0	3	0	4	0
Peanuts	10	100	10	100	10	100	10	100	10	100	10	100
Gladiolus	3	0	5	17	7	20	3	0	5	10	8	23
Chestnuts	0	0	1	7	3	20	3	7	5	47	9	92
Sorghum	1	0	3	10	3	20	1	10	3	27	5	40
Sudan grass	1	0	3	10	3	20	1	10	3	27	5	40
Buckwheat	10	100	10	100	10	100	10	100	10	100	10	100
Squash	10	100	10	100	10	100	10	100	10	100	10	100
Oats	7	67	8	77	9	95	9	95	10	100	10	100
Cowpeas	9	92	10	100	10	100	9	95	10	100	10	100
Red clover	9	95	10	100	10	100	10	100	10	100	10	100
Alfalfa	9	93	9	95	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100	10	100	10	100
White clover	9	95	10	100	10	100	10	100	10	100	10	100
B-ft. trefoil	9	95	10	100	10	100	10	100	10	100	10	100
Sansevieria	0	0	0	0	3	0	0	0	0	0	3	0
Crop Tox. Av.	7	64	8	73	8	77	7	70	8	79	9	84
Weeds:												
Crabgrass	2	17	5	47	7	67	5	50	7	67	9	92
Ryegrass	6	57	8	67	9	92	5	53	8	77	10	100
Pigweed	2	17	5	47	8	73	6	63	8	77	9	95
Mustard	7	67	9	92	9	95	9	95	10	100	10	100
Lambsquarters	2	17	5	47	8	73	6	63	8	77	9	95
Grasses	2	17	5	47	7	67	5	50	7	67	9	92
Broadleaf	2	17	5	47	8	73	6	63	8	77	9	95
Weed Tox. Av.	3	30	6	56	8	77	6	62	8	77	9	96
Total Tox. Av.	6	57	7	69	8	77	7	69	8	78	9	86

Table 32 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-chloro-4,6-bis(ethylamino)-s-triazine [simazin]						2-chloro-4,6-bis(diethylamino)-s-triazine [CDT]					
	2 lb per acre		4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre		8 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	2	20	3	33	5	53	1	10	2	20	3	27
Cucumber	10	100	10	100	10	100	1	10	2	20	3	27
Cotton	1	7	2	17	4	37	0	0	2	10	4	33
Soybeans	5	53	8	77	10	100	1	10	3	27	4	30
Sugar beets	9	93	9	95	10	100	7	67	8	77	10	100
Flax	8	77	9	92	10	100	2	23	4	43	9	88
Snapbeans	7	67	9	92	10	100	3	27	5	47	7	67
Safflower	10	100	10	100	10	100	10	100	10	100	10	100
Castorbeans	10	100	10	100	10	100	3	33	5	50	7	67
Corn	3	0	4	0	5	0	1	3	3	13	6	0
Peanuts	1	13	4	40	6	57	0	0	2	17	3	23
Gladiolus	2	0	3	0	4	0	1	0	2	0	3	0
Chestnuts	3	0	5	10	9	87	0	0	0	0	0	0
Sorghum	2	23	4	43	8	83	4	43	7	67	9	92
Sudan grass	2	23	4	43	8	83	3	27	5	47	8	77
Buckwheat	10	100	10	100	10	100	3	27	5	47	9	92
Squash	10	100	10	100	10	100	3	27	5	47	8	83
Oats	9	95	10	100	10	100	2	23	4	43	8	77
Cowpeas	7	67	9	90	9	95	2	17	4	37	6	60
Red clover	8	77	9	90	10	100	3	33	5	53	8	77
Alfalfa	7	67	9	92	9	95	2	17	3	33	7	67
Lespedeza	6	57	8	73	9	88	4	37	6	57	6	57
White clover	8	77	9	92	10	100	3	33	5	53	7	73
B-ft. trefoil	8	77	9	92	10	100	3	33	5	53	7	73
Sansevieria	2	0	4	0	7	0	0	0	0	0	0	0
Crop Tox. Av.	6	56	7	67	9	79	2	24	4	38	6	56
<u>Weeds:</u>												
Crabgrass	6	57	8	77	9	95	3	27	6	63	9	92
Ryegrass	9	95	10	100	10	100	2	17	3	37	6	57
Pigweed	2	17	4	37	7	67	0	0	0	0	0	0
Mustard	9	90	9	95	10	100	4	37	6	57	8	77
Lambsquarters	2	17	4	37	7	67	2	17	4	37	6	57
Grasses	6	57	8	77	9	95	3	27	6	63	9	92
Broadleaf	2	17	4	37	6	63	0	0	0	0	8	77
Weed Tox. Av.	5	50	7	66	8	84	2	18	4	37	7	65
Total Tox. Av.	6	54	7	67	8	80	2	23	4	38	6	58

Table 33 - The effect of 2-chloro-4,6-bis(isopropylamino)-s-triazine as a post-emergence spray on crops and weeds.

Crops	2-chloro-4,6-bis(isopropylamino)-s-triazine							
	2 lb per acre		4 lb per acre		8 lb per acre		--- lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	2	23	5	47	7	67		
Cucumber	10	100	10	100	10	100		
Cotton	1	7	2	17	4	30		
Soybeans	10	100	10	100	10	100		
Sugar beets	9	95	10	100	10	100		
Flax	9	37	6	57	8	77		
Snapbeans	9	95	10	100	10	100		Not
Safflower	4	43	7	70	9	93		Applied
Castorbeans	10	100	10	100	10	100		
Corn	3	0	4	0	5	0		
Peanuts	2	20	3	27	4	37		
Gladiolus	2	0	4	13	6	17		
Chestnuts	0	0	2	0	4	37		
Sorghum	2	17	4	37	6	57		
Sudan grass	2	17	4	37	6	57		
Buckwheat	10	100	10	100	10	100		
Squash	10	100	10	100	10	100		
Oats	5	47	7	67	9	92		
Cowpeas	7	67	9	90	10	100		
Red clover	8	77	9	90	9	95		
Alfalfa	9	93	9	95	10	100		Not
Lespedeza	9	92	10	100	10	100		Applied
White clover	8	77	9	90	9	95		
B-ft. trefoil	8	77	9	90	9	95		
Sansevieria	0	0	0	0	0	0		
Crop Tox. Av.	6	55	7	65	8	74		
Weeds:								
Crabgrass	2	17	4	37	6	57		
Ryegrass	4	37	6	57	9	92		
Pigweed	4	37	6	57	9	92		
Mustard	8	77	9	90	9	95		
Lambsquarters	9	95	10	100	10	100		Not
Grasses	2	17	4	37	6	57		Applied
Broadleaf	4	37	6	57	9	92		
Weed Tox. Av.	5	45	6	62	8	83		
Total Tox. Av.	6	53	7	64	8	76		

Table 34 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	sodium salt of polychloro- benzoic acid				potassium salt of polychloro- benzoic acid			
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	4	37	6	57	3	33	5	53
Cucumber	4	40	7	67	5	53	7	70
Cotton	10	100	10	100	9	95	10	100
Soybeans	9	95	10	100	8	77	9	95
Sugar beets	8	80	9	95	7	67	9	92
Flax	7	60	9	67	6	43	7	53
Snapbeans	4	43	7	70	6	60	9	93
Safflower	9	92	10	100	9	73	10	100
Castorbeans	9	95	10	100	6	63	9	95
Corn	3	0	6	0	3	0	6	13
Peanuts	8	80	10	100	6	43	8	57
Gladiolus	3	10	4	10	2	0	4	0
Chestnuts	10	100	10	100	3	23	5	50
Sorghum	3	23	4	40	2	10	4	23
Sudan grass	2	10	4	30	2	10	4	23
Buckwheat	4	37	6	57	6	57	8	77
Squash	5	40	7	70	8	80	9	92
Oats	3	30	4	33	2	10	4	23
Cowpeas	6	57	8	77	5	40	7	53
Red clover	9	93	9	95	6	43	8	63
Alfalfa	9	92	10	100	9	92	10	100
Lespedeza	10	100	10	100	8	83	10	100
White clover	9	93	9	95	6	43	8	63
B-ft. trefoil	9	93	9	95	6	43	8	63
Sansevieria	6	7	9	92	4	0	7	0
Crop Tox. Av.	7	60	8	74	6	46	7	46
<u>Weeds:</u>								
Crabgrass	0	0	0	0	0	0	0	0
Ryegrass	0	0	0	0	0	0	0	0
Pigweed	8	77	9	95	8	83	9	95
Mustard	7	67	9	92	8	83	9	92
Lambsquarters	8	77	9	95	8	83	9	95
Grasses	0	0	0	0	0	0	0	0
Broadleaf	8	77	9	95	8	83	9	95
Weed Tox. Av.	4	43	5	54	5	47	5	54
Total Tox. Av.	6	56	7	70	5	46	7	48

Table 35 - The effect of three chemicals as post-emergence sprays on crops and weeds.

Crops	monoethanolamine salt of polychlorobenzoic acid				diethanolamine salt of polychlorobenzoic acid				triethanolamine salt of polychlorobenzoic acid			
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	4	43	8	77	3	33	6	57	3	27	6	57
Cucumber	3	30	4	43	2	13	4	33	2	20	4	27
Cotton	7	73	9	95	5	53	8	77	5	53	8	77
Soybeans	5	53	9	90	5	43	7	63	4	27	6	43
Sugar beets	6	63	9	90	5	53	9	87	4	43	8	77
Flax	5	37	7	53	3	13	5	33	3	30	5	50
Snapbeans	5	53	8	80	4	43	6	63	4	43	6	57
Safflower	8	83	10	100	9	90	10	100	7	73	10	100
Castorbeans	6	0	8	0	4	13	6	23	5	10	6	20
Corn	4	0	5	0	4	0	6	0	4	0	6	0
Peanuts	5	33	7	50	5	50	7	67	5	50	7	67
Gladiolus	2	0	3	0	1	0	3	3	1	0	3	0
Chestnuts	4	37	5	50	4	23	8	63	4	23	8	63
Sorghum	2	0	4	0	0	0	4	3	0	0	2	0
Sudan grass	2	0	4	0	0	0	4	3	0	0	2	0
Buckwheat	3	33	5	50	4	40	6	57	4	40	6	60
Squash	5	33	8	63	5	23	7	33	3	10	4	20
Oats	3	23	5	40	3	13	3	33	3	13	4	27
Cowpeas	5	27	8	63	3	13	6	33	1	0	4	10
Red clover	5	50	7	70	5	23	6	40	5	23	6	40
Alfalfa	9	92	10	100	5	43	8	77	6	43	8	77
Lespedeza	9	90	9	95	6	57	8	80	6	57	8	77
White clover	5	50	7	67	5	23	6	40	5	20	6	43
B-ft. trefoil	5	50	7	67	5	23	6	40	5	23	6	43
Sansevieria	6	0	8	0	2	0	5	0	2	0	5	0
Crop Tox. Av.	5	38	7	54	4	27	6	44	4	25	6	41
<u>Weeds:</u>												
Crabgrass	0	0	0	0	0	0	0	0	0	0	0	0
Ryegrass	0	0	0	0	0	0	0	0	0	0	0	0
Pigweed	4	43	7	70	4	10	6	23	4	10	6	20
Mustard	5	47	7	67	3	33	5	50	3	33	5	50
Lambsquarters	4	43	7	70	4	10	6	23	4	10	6	23
Grasses	0	0	0	0	0	0	0	0	0	0	0	0
Broadleaf	4	43	7	70	4	10	6	23	4	10	3	16
Weed Tox. Av.	3	25	4	40	2	9	3	17	2	9	3	16
Total Tox. Av.	4	35	6	51	4	23	5	38	3	22	5	36

Table 36 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-methoxy-3,6-dichlorobenzoic acid						sodium salt of 2,3,6-trichlorobenzoic acid					
	1/2 lb per acre		1 lb per acre		2 lb per acre		1/2 lb per acre		1 lb per acre		2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	7	73	9	95	10	100	5	47	6	63	9	95
Cucumber	7	53	9	95	9	95	7	70	9	90	9	95
Cotton	6	53	9	92	9	95	5	53	8	80	9	95
Soybeans	10	100	10	100	10	100	10	100	10	100	10	100
Sugar beets	9	95	9	95	10	100	6	63	9	90	10	100
Flax	6	67	8	77	9	95	5	40	8	67	9	95
Snapbeans	6	70	9	95	10	100	6	50	9	95	10	100
Safflower	9	95	10	100	10	100	9	95	10	100	10	100
Castorbeans	10	100	10	100	10	100	10	100	10	100	10	100
Corn	3	0	4	0	5	0	2	0	4	0	7	0
Peanuts	6	63	7	70	9	95	7	67	8	80	9	95
Gladiolus	1	0	1	0	3	0	1	0	1	0	2	0
Chestnuts	2	0	5	0	9	95	6	57	8	77	10	100
Sorghum	3	0	5	0	7	0	4	37	6	57	8	77
Sudan grass	3	0	5	0	7	0	3	27	4	40	5	53
Buckwheat	4	43	6	60	9	92	3	27	5	53	9	92
Squash	9	95	10	100	10	100	3	30	6	60	9	95
Oats	2	3	5	3	6	0	2	23	5	53	8	77
Cowpeas	5	47	7	70	9	95	5	53	8	80	9	95
Red clover	9	95	10	100	10	100	7	57	9	83	10	100
Alfalfa	10	100	10	100	10	100	9	90	9	95	10	100
Lespedeza	9	92	9	95	10	100	9	90	9	95	10	100
White clover	9	95	10	100	10	100	7	57	9	83	10	100
B-ft. trefoil	9	95	10	100	10	100	7	57	9	83	9	95
Sansevieria	0	0	2	0	5	0	0	0	3	0	7	0
Crop Tox. Av.	6	57	8	66	9	74	5	52	7	69	9	82
Weeds:												
Crabgrass	0	0	0	3	1	7	0	0	1	7	3	23
Ryegrass	0	0	0	0	0	0	0	0	1	7	3	23
Pigweed	9	95	9	95	9	95	5	50	7	70	8	83
Mustard	3	27	5	47	7	67	3	27	5	47	6	63
Lambsquarters	9	95	9	95	9	95	5	50	7	70	8	83
Grasses	0	0	0	3	1	7	0	0	1	7	3	23
Broadleaf	9	95	9	95	9	95	5	50	7	70	8	83
Weed Tox. Av.	4	45	5	48	5	52	3	25	4	40	6	54
Total Tox. Av.	6	55	7	62	8	70	5	46	7	63	8	76

Table 37- The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-methoxy-3,5,6-trichloro-benzoic acid				2-methoxy-3,5-dichloro-benzoic acid			
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	8	87	9	92	5	50	9	93
Cucumber	9	92	10	100	5	47	9	91
Cotton	10	100	10	100	10	100	10	100
Soybeans	10	100	10	100	7	72	10	100
Sugar beets	9	95	10	100	8	77	9	91
Flax	8	83	9	95	5	44	8	77
Snapbeans	9	95	10	100	6	62	8	80
Safflower	10	100	10	100	9	91	10	100
Castorbeans	10	100	10	100	3	30	6	59
Corn	4	0	7	0	3	15	6	30
Peanuts	9	90	9	95	1	5	5	47
Gladiolus	3	0	7	7	0	0	2	15
Chestnuts	4	43	8	77	2	19	8	79
Sorghum	2	17	4	37	5	50	9	91
Sudan grass	2	17	4	37	3	32	7	72
Buckwheat	6	57	8	77	5	52	8	80
Squash	9	95	10	100	6	60	8	80
Oats	5	50	7	70	5	52	7	72
Cowpeas	9	90	9	95	6	59	9	91
Red clover	9	95	10	100	5	44	7	72
Alfalfa	10	100	10	100	4	42	7	70
Lespedeza	10	100	10	100	8	80	9	93
White clover	9	95	10	100	5	44	9	93
B-ft. trefoil	9	95	10	100	5	44	7	72
Sansevieria	0	0	5	0	0	0	4	20
Crop Tox. Av.	7	71	9	79	5	47	8	75
<u>Weeds:</u>								
Crabgrass	0	0	2	17	0	0	0	0
Ryegrass	0	0	3	27	0	0	0	0
Pigweed	9	92	10	100	4	39	6	62
Mustard	6	57	8	80	4	39	6	62
Lambsquarters	9	92	10	100	4	39	6	62
Grasses	0	0	2	17	0	0	0	0
Broadleaf	9	92	10	100	4	39	6	62
Weed Tox. Av.	5	48	6	63	2	21	3	36
Total Tox. Av.	7	67	8	76	4	40	7	65

Table 38 - The effect of 2,5-dichloro-3-nitrobenzoic acid as a post-emergence spray on crops and weeds.

Crops	2,5-dichloro-3-nitrobenzoic acid							
	2 lb per acre		4 lb per acre		8 lb per acre		--- lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	3	27	5	53	7	67	Not Applied	
Cucumber	2	27	4	43	7	67		
Cotton	3	33	5	53	7	73		
Soybeans	2	23	4	37	8	77		
Sugar beets	2	17	4	37	6	63		
Flax	2	17	3	33	6	63		
Snapbeans	2	17	4	37	6	57		
Safflower	2	17	3	30	5	47		
Castorbeans	5	50	7	70	9	92		
Corn	2	0	3	0	5	0		
Peanuts	2	10	3	23	4	30		
Gladiolus	1	0	1	0	3	0		
Chestnuts	3	33	8	80	9	92		
Sorghum	1	10	2	20	3	33		
Sudan grass	1	10	2	20	3	33		
Buckwheat	4	37	6	60	8	77		
Squash	2	17	5	47	7	73		
Oats	2	23	4	43	6	57		
Cowpeas	3	23	6	57	9	92		
Red clover	5	50	7	67	8	77	Not Applied	
Alfalfa	1	10	2	20	4	43		
Lespedeza	5	50	7	67	8	83		
White clover	5	50	7	67	8	77		
B-ft. trefoil	5	50	7	67	8	77		
Sansevieria	0	0	0	0	0	0		
Crop Tox. Av.	3	24	4	42	6	58		
<u>Weeds:</u>								
Crabgrass	0	0	0	0	1	13	Not Applied	
Ryegrass	1	10	2	23	4	37		
Pigweed	9	90	9	95	9	95		
Mustard	2	17	3	27	5	50		
Lambsquarters	9	90	9	95	9	95		
Grasses	0	0	0	0	1	13		
Broadleaf	9	90	9	95	9	95		
Weed Tox. Av.	4	42	5	48	5	57		
Total Tox. Av.	3	28	4	43	6	58		

Table 39- The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2,3,6-trichlorobenzoic acid-L-leucine						2-(2,4-dichlorophenoxy)ethanol ester of 2,3,6-trichlorobenzoic acid					
	1/2 lb per acre		1 lb per acre		2 lb per acre		1/2 lb per acre		1 lb per acre		---lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	1	10	3	27	6	60	1	13	4	37	Not Applied	
Cucumber	1	10	4	37	5	53	3	33	6	57		
Cotton	1	10	1	10	4	37	4	37	7	70		
Soybeans	3	13	5	23	5	40	4	40	8	77		
Sugar beets	3	23	3	30	5	53	4	43	7	67		
Flax	2	10	2	13	4	43	4	27	6	47		
Snapbeans	2	10	4	23	5	40	2	23	5	53		
Safflower	3	27	4	43	8	80	6	47	9	95		
Castorbeans	2	0	4	0	4	0	6	57	9	95		
Corn	2	0	5	0	6	0	4	0	6	0		
Peanuts	2	17	3	27	4	40	3	20	5	40	Not Applied	
Gladiolus	0	0	0	0	2	0	0	0	2	0		
Chestnuts	0	0	0	0	2	10	3	10	5	27		
Sorghum	4	0	6	10	5	10	2	0	4	37		
Sudan grass	4	0	6	10	5	10	2	17	4	30		
Buckwheat	2	17	4	37	6	57	4	47	7	73		
Squash	6	57	6	57	8	77	5	53	8	80		
Oats	2	0	3	0	4	0	5	53	7	73		
Cowpeas	3	10	4	20	6	50	4	40	7	67		
Red clover	1	0	3	20	4	40	4	40	6	60		
Alfalfa	2	20	4	33	5	40	8	83	9	92	Not Applied	
Lespedeza	2	20	4	33	5	47	9	90	9	95		
White clover	1	0	3	20	4	40	3	33	5	53		
B-ft. trefoil	1	0	3	20	4	40	4	40	6	60		
Sansevieria	0	0	0	0	2	0	0	0	0	0		
Crop Tox. Av.	2	10	3	20	5	35	4	33	6	55		
Weeds:												
Crabgrass	0	0	0	0	0	0	0	0	2	17	Not Applied	
Ryegrass	0	0	0	0	0	0	0	0	2	17		
Pigweed	0	0	5	47	8	77	4	43	6	57		
Mustard	0	0	5	47	8	77	2	27	5	50		
Lambsquarters	0	0	5	47	8	77	4	43	6	57		
Grasses	0	0	0	0	0	0	0	0	2	17		
Broadleaf	0	0	5	47	8	77	4	43	6	57		
Weed Tox. Av.	0	0	3	27	5	44	2	22	4	39		
Total Tox. Av.	2	8	3	21	5	37	3	31	6	52		

Table 40 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	sodium salt of 2,2-dichloro- propionic acid [dalapon]				Na ² -(2,2-dichloropropionyl)-L- leucine			
	4 lb per acre		8 lb per acre		2 lb per acre		4 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	9	93	9	95	3	27	5	47
Cucumber	6	57	9	92	2	17	4	37
Cotton	7	67	9	92	3	27	5	47
Soybeans	7	67	9	92	5	47	7	67
Sugar beets	5	47	7	67	5	47	7	67
Flax	5	47	9	92	7	67	9	92
Snapbeans	9	90	9	95	6	57	9	92
Safflower	9	92	10	100	9	93	9	95
Castorbeans	4	30	7	60	7	67	8	77
Corn	8	80	9	92	7	67	9	92
Peanuts	9	90	9	95	5	47	7	67
Gladiolus	5	20	8	57	2	0	3	0
Chestnuts	4	43	6	57	2	17	4	37
Sorghum	9	90	9	95	4	37	9	92
Sudan grass	9	95	10	100	6	50	9	92
Buckwheat	2	13	3	23	3	27	5	47
Squash	3	27	6	60	5	47	7	67
Oats	7	67	9	92	6	57	8	80
Cowpeas	7	33	8	57	6	43	9	63
Red clover	7	73	9	87	4	37	7	67
Alfalfa	7	53	9	92	3	27	7	67
Lespedeza	7	50	9	77	5	40	7	77
White clover	4	37	7	67	4	37	7	60
B-ft. trefoil	7	73	9	88	4	37	7	67
Sansevieria	2	0	7	0	3	27	5	47
Crop Tox. Av.	6	57	8	77	5	42	7	66
<u>Weeds:</u>								
Crabgrass	9	93	9	95	9	90	9	95
Ryegrass	9	90	9	95	3	27	7	67
Pigweed	4	23	7	53	4	37	7	67
Mustard	4	37	6	57	4	37	7	67
Lambsquarters	4	23	7	53	4	37	7	67
Grasses	9	93	9	95	9	90	9	95
Broadleaf	4	23	7	53	4	37	7	67
Weed Tox. Av.	6	55	8	72	5	51	8	75
Total Tox. Av.	6	57	8	76	5	44	7	68

Table 41 - The effect of 1,1'-ethylene-2,2'-dipyridylium dibromide as a post-emergence spray on crops and weeds.

Crops	1,1'-ethylene-2,2'-dipyridylium dibromide											
	¼ lb		½ lb		1 lb		2 lb		4 lb		8 lb	
	per acre		per acre		per acre		per acre		per acre		per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	9	92	10	100	10	100	10	100	10	100	10	100
Cucumber	1	10	4	37	10	100	10	100	10	100	10	100
Cotton	5	53	7	70	10	100	10	100	10	100	10	100
Soybeans	3	40	9	95	10	100	10	100	10	100	10	100
Sugar beets	1	10	2	20	2	17	4	37	4	37	4	43
Flax	9	90	9	95	10	100	10	100	10	100	10	100
Snapbeans	3	30	4	43	8	77	9	95	10	100	10	100
Safflower	10	100	10	100	10	100	10	100	10	100	10	100
Castorbeans	2	7	4	27	8	77	10	100	10	100	10	100
Corn	2	0	3	0	7	67	8	77	9	95	10	100
Peanuts	1	10	4	37	7	67	8	77	10	100	10	100
Gladiolus	2	0	3	10	5	40	8	77	10	100	10	100
Chestnuts	0	0	0	0	4	37	6	57	7	73	9	88
Sorghum	1	10	2	17	4	30	5	50	6	60	7	70
Sudan grass	1	10	2	17	2	10	3	20	4	30	5	37
Buckwheat	4	43	7	73	9	93	9	95	10	100	10	100
Squash	4	40	6	60	9	90	9	95	10	100	10	100
Oats	2	23	5	50	9	92	10	100	10	100	10	100
Cowpeas	2	10	3	20	9	95	10	100	10	100	10	100
Red clover	5	50	7	70	9	90	9	95	9	93	9	95
Alfalfa	9	90	10	100	10	100	10	100	10	95	10	100
Lespedeza	4	40	8	80	9	90	9	95	9	93	9	95
White clover	5	50	7	70	9	90	9	95	9	93	9	95
B-ft. trefoil	5	50	7	70	9	90	9	95	9	93	9	95
Sansevieria	2	0	6	0	9	90	9	92	9	95	10	100
Crop Tox. Av.	4	34	6	50	8	78	9	86	9	90	9	93
<u>Weeds:</u>												
Crabgrass	0	0	1	7	2	17	4	37	6	57	8	77
Ryegrass	2	17	3	27	8	77	9	92	10	100	10	100
Pigweed	1	10	2	17	6	57	8	77	8	77	9	92
Mustard	8	83	10	100	10	100	10	100	10	100	10	100
Lambsquarters	1	10	2	17	6	57	8	77	8	77	9	92
Grasses	0	0	1	7	2	17	4	37	6	57	8	77
Broadleaf	1	10	2	17	6	57	8	77	8	77	9	92
Weed Tox. Av.	2	19	3	27	6	55	7	71	8	78	9	90
Total Tox. Av.	3	33	5	45	7	73	8	83	9	88	9	92

Table 42 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	alkanolamine salt of 2,4-dichlorophenoxyacetic acid				propylene glycol butyl ether ester of 2,4-dichlorophenoxyacetic acid			
	1/2 lb per acre		1 lb per acre		1/2 lb per acre		1 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	10	100	10	100	10	100	10	100
Cucumber	10	100	10	100	10	100	10	100
Cotton	10	100	10	100	10	100	10	100
Soybeans	10	100	10	100	10	100	10	100
Sugar beets	9	95	10	100	9	95	10	100
Flax	2	17	4	37	2	17	4	37
Snapbeans	10	100	10	100	10	100	10	100
Safflower	10	100	10	100	10	100	10	100
Castorbeans	10	100	10	100	10	100	10	100
Corn	1	0	2	0	2	23	4	37
Peanuts	4	37	6	57	1	7	2	17
Gladiolus	2	0	2	0	2	0	4	0
Chestnuts	2	0	3	0	3	0	4	0
Sorghum	1	0	2	0	1	7	3	27
Sudan grass	1	0	2	0	1	7	3	27
Buckwheat	9	90	9	92	9	93	9	95
Squash	3	27	7	67	6	57	8	77
Oats	1	0	2	10	2	17	5	50
Cowpeas	10	100	10	100	10	100	10	100
Red clover	9	90	9	95	9	93	9	95
Alfalfa	10	100	10	100	10	100	10	100
Lespedeza	9	92	10	100	9	90	9	95
White clover	9	90	9	92	6	57	8	77
B-ft. trefoil	9	90	9	92	9	93	9	95
Sansevieria	0	0	2	0	0	0	0	0
Crop Tox. Av.	6	61	7	66	6	62	7	69
<u>Weeds:</u>								
Crabgrass	0	0	0	0	0	0	0	0
Ryegrass	1	7	2	17	1	13	3	30
Pigweed	9	95	10	100	9	95	10	100
Mustard	9	95	10	100	9	95	10	100
Lambsquarters	9	95	10	100	9	95	10	100
Grasses	0	0	0	0	0	0	0	0
Broadleaf	9	95	10	100	9	95	10	100
Weed Tox. Av.	5	55	6	60	5	55	6	61
Total Tox. Av.	6	60	7	64	6	61	7	67

Table 43- The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	2-(2,4-D)ethanol ester of 2,4,5-trichlorophenoxyacetic acid				2-(2,4,5-T)ethanol ester of 2,4-dichlorophenoxyacetic acid			
	1/2 lb per acre		1 lb per acre		1/2 lb per acre		1 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	10	100	10	100	9	90	9	95
Cucumber	10	100	10	100	0	7	2	10
Cotton	10	100	10	100	10	100	10	100
Soybeans	10	100	10	100	10	100	10	100
Sugar beets	9	90	9	95	9	95	10	100
Flax	10	100	10	100	4	37	6	57
Snapbeans	10	100	10	100	6	57	10	100
Safflower	10	100	10	100	10	100	10	100
Castorbeans	10	100	10	100	10	100	10	100
Corn	2	0	3	0	2	0	3	0
Peanuts	4	43	7	67	1	7	3	20
Gladiolus	2	0	4	0	0	0	0	0
Chestnuts	2	23	3	33	0	0	0	0
Sorghum	2	17	5	47	0	0	0	0
Sudan grass	1	7	3	27	0	0	0	0
Buckwheat	5	53	8	77	8	77	9	92
Squash	10	100	10	100	7	67	9	95
Oats	4	43	7	67	0	0	0	0
Cowpeas	10	100	10	100	9	95	10	100
Red clover	8	77	9	95	10	100	10	100
Alfalfa	10	100	10	100	10	100	10	100
Lespedeza	10	100	10	100	10	100	10	100
White clover	10	100	10	100	8	77	9	95
B-ft. trefoil	10	100	10	100	10	100	10	100
Sansevieria	3	0	5	0	0	0	0	0
Crop Tox. Av.	7	70	8	76	6	56	6	63
<u>Weeds:</u>								
Crabgrass	0	0	0	0	0	0	0	0
Ryegrass	2	13	3	30	1	7	2	13
Pigweed	9	93	9	95	9	95	10	100
Mustard	9	93	9	95	9	95	10	100
Lambsquarters	9	93	9	95	9	95	10	100
Grasses	0	0	0	0	1	7	2	17
Broadleaf	9	93	9	95	9	95	10	100
Weed Tox. Av.	5	55	6	59	5	56	6	61
Total Tox. Av.	7	67	8	72	6	56	6	62

Table 44- The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	Sta-amino A-2-(2,4-DP)				Sta-amino B-2-(2,4-DP)			
	1/2 lb per acre		1 lb per acre		1/2 lb per acre		1 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	4	37	6	57	3	27	5	47
Cucumber	4	37	6	57	4	37	6	57
Cotton	10	100	10	100	10	100	10	100
Soybeans	3	27	6	57	3	27	4	37
Sugar beets	3	33	7	73	2	23	5	53
Flax	4	43	8	77	3	27	5	47
Snapbeans	3	27	6	57	2	17	3	27
Safflower	10	100	10	100	8	85	10	100
Castorbeans	8	77	10	100	8	77	9	95
Corn	2	0	3	0	3	0	4	0
Peanuts	3	0	4	0	2	0	3	0
Gladiolus	0	0	1	13	0	0	1	0
Chestnuts	4	37	6	57	4	37	6	57
Sorghum	2	17	3	27	3	27	5	47
Sudan grass	2	17	3	27	2	17	4	37
Buckwheat	4	43	6	57	3	37	6	57
Squash	10	100	10	100	4	37	6	57
Oats	0	0	1	7	0	0	0	0
Cowpeas	2	17	4	43	3	27	5	47
Red clover	2	17	4	37	2	10	3	23
Alfalfa	3	27	5	47	2	17	3	27
Lespedeza	8	77	9	92	2	10	3	20
White clover	2	17	4	37	2	10	3	20
B-ft. trefoil	2	17	4	37	2	10	3	20
Sansevieria	2	0	4	0	2	0	3	0
Crop Tox. Av.	4	35	6	50	3	26	5	39
<u>Weeds:</u>								
Crabgrass	0	0	0	0	0	0	0	0
Ryegrass	1	10	3	23	2	17	3	27
Pigweed	7	73	9	92	4	37	6	57
Mustard	7	73	9	92	4	37	6	57
Lambsquarters	7	73	9	92	4	37	6	57
Grasses	0	0	0	0	0	0	0	0
Broadleaf	7	73	9	92	4	37	6	57
Weed Tox. Av.	4	43	6	56	2	21	4	33
Total Tox. Av.	4	37	6	52	3	25	4	38

Table 45- The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	N-2-(2,4-DP)-DL-phenylalanine				N-2-(2,4-DP)-L-methionine			
	1/2 lb per acre		1 lb per acre		1/2 lb per acre		1 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	4	37	6	63	4	37	6	57
Cucumber	6	57	8	77	4	37	7	67
Cotton	8	80	9	92	8	77	9	95
Soybeans	4	37	7	73	5	47	8	77
Sugar beets	9	90	9	95	9	92	10	100
Flax	9	90	9	95	9	92	10	100
Snapbeans	7	67	8	83	5	47	7	67
Safflower	9	90	9	95	10	100	10	100
Castorbeans	8	77	9	92	8	77	9	92
Corn	2	0	3	0	2	0	3	0
Peanuts	1	7	2	17	2	17	4	37
Gladiolus	1	0	3	0	3	13	4	13
Chestnuts	6	57	8	77	4	37	7	67
Sorghum	2	17	3	27	1	7	4	33
Sudan grass	2	17	3	27	1	7	4	33
Buckwheat	3	30	4	40	6	57	8	77
Squash	9	90	9	95	9	95	10	100
Oats	2	17	5	47	3	27	5	47
Cowpeas	2	17	5	47	3	27	5	47
Red clover	2	17	4	40	6	57	8	77
Alfalfa	2	17	5	47	9	90	9	95
Lespedeza	2	17	4	37	6	57	8	77
White clover	2	17	4	37	6	57	8	77
B-ft. trefoil	2	17	4	37	6	57	8	77
Sansevieria	2	0	5	0	2	0	4	0
Crop Tox. Av.	4	38	6	54	5	48	7	64
<u>Weeds:</u>								
Crabgrass	5	53	8	77	6	57	8	77
Ryegrass	2	17	4	37	2	17	4	37
Pigweed	6	57	8	77	6	57	8	77
Mustard	9	95	10	100	9	95	10	100
Lambsquarters	6	57	8	80	6	57	8	77
Grasses	5	53	8	77	6	57	8	77
Broadleaf	6	57	8	80	6	57	8	77
Weed Tox. Av.	6	56	8	75	6	57	8	75
Total Tox. Av.	5	42	6	58	5	50	7	67

Table 46 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	N-2-(2,4-DP)-L-leucine				alkanolamine salt of 2-(2,4-DP)			
	$\frac{1}{2}$ lb per acre		1 lb per acre		$\frac{1}{2}$ lb per acre		1 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	3	27	5	47	4	43	7	67
Cucumber	6	63	9	93	10	100	10	100
Cotton	9	90	9	95	10	100	10	100
Soybeans	3	43	6	60	3	33	9	88
Sugar beets	9	90	9	95	9	95	10	100
Flax	8	77	9	92	9	90	9	95
Snapbeans	6	63	9	92	4	43	7	67
Safflower	10	100	10	100	10	100	10	100
Castorbeans	9	95	10	100	9	95	10	100
Corn	2	0	3	0	2	0	3	0
Peanuts	3	33	5	53	3	27	6	57
Gladiolus	0	0	2	0	1	0	2	0
Chestnuts	6	63	9	90	10	100	10	100
Sorghum	2	17	3	27	2	17	3	27
Sudan grass	3	27	6	57	2	17	3	27
Buckwheat	5	53	8	77	3	33	5	50
Squash	10	100	10	100	9	95	10	100
Oats	3	27	5	47	9	93	9	95
Cowpeas	3	27	4	47	3	27	6	57
Red clover	4	37	6	57	3	27	6	57
Alfalfa	8	77	9	92	9	95	10	100
Lespedeza	4	37	6	57	3	27	5	47
White clover	5	47	7	67	3	27	6	57
B-ft. trefoil	4	37	6	57	3	27	6	57
Sansevieria	3	27	5	47	-	--	-	--
Crop Tox. Av.	5	50	7	66	6	55	7	69
Weeds:								
Crabgrass	6	57	8	77	4	37	6	57
Ryegrass	2	10	3	27	1	10	2	23
Pigweed	4	43	7	67	8	77	9	92
Mustard	4	43	7	67	8	77	9	92
Lambsquarters	4	43	7	67	8	77	9	92
Grasses	6	57	8	77	4	37	6	57
Broadleaf	4	43	7	67	8	77	9	92
Weed Tox. Av.	4	42	7	64	6	56	7	72
Total Tox. Av.	5	49	7	66	6	55	7	69

Table 47 - The effect of two chemicals as post-emergence sprays on crops and weeds.

Crops	propylene glycol butyl ether ester of 4-(2,4-DB)				2-(2,4-D)ethanol ester of 4-(2,4-DB)							
	1 lb per acre		2 lb per acre		1 lb per acre		2 lb per acre		1 lb per acre		1 lb per acre	
	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill	Inj. sc.	Plt. kill
	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.	no.	pct.
Lima beans	9	95	10	100	10	100	10	100	Not Applied			
Cucumber	2	20	3	30	5	53	8	77				
Cotton	10	100	10	100	10	100	10	100				
Soybeans	10	100	10	100	10	100	10	100				
Sugar beets	9	90	9	95	9	95	10	100				
Flax	3	30	5	53	7	70	9	95				
Snapbeans	7	73	10	100	9	90	9	95				
Safflower	10	100	10	100	10	100	10	100				
Castorbeans	10	100	10	100	10	100	10	100				
Corn	2	0	3	0	2	0	3	0				
Peanuts	1	10	3	13	1	7	2	10	Not Applied			
Gladiolus	1	0	2	0	2	0	3	0				
Chestnuts	1	7	3	10	4	43	5	53				
Sorghum	2	17	3	27	3	27	4	37				
Sudan grass	1	10	2	20	3	27	4	37				
Buckwheat	8	83	9	93	8	77	9	92				
Squash	4	37	8	77	5	53	8	77				
Oats	2	20	3	33	1	10	3	20				
Cowpeas	10	100	10	100	10	100	10	100				
Red clover	1	13	3	27	3	27	5	47				
Alfalfa	2	20	4	40	6	57	8	77	Not Applied			
Lespedeza	5	50	7	70	7	67	9	92				
White clover	1	13	3	27	3	27	5	47				
B-ft. trefoil	1	13	3	27	3	27	5	47				
Sansevieria	0	0	0	0	0	0	0	0				
Crop Tox. Av.	5	44	6	54	6	54	7	64				
<u>Weeds:</u>												
Crabgrass	0	0	0	0	0	0	0	0	Not Applied			
Ryegrass	0	0	0	0	2	17	4	37				
Pigweed	9	95	10	100	9	90	9	95				
Mustard	9	95	10	100	9	90	9	95				
Lambsquarters	9	95	10	100	9	90	9	95				
Grasses	0	0	0	0	0	0	0	0				
Broadleaf	9	95	10	100	9	90	9	95				
Weed Tox. Av.	5	54	6	57	5	54	6	60				
Total Tox. Av.	5	46	6	54	6	54	7	63				

Table 19

Crops	Rate lb /A	Chemicals applied pre-emergence													
		TCA, sodium salt	dalapon, sodium salt	sodium salt of 2,3-dichloro- isobutyric acid	monuron	3-(p-chlorophenyl)-1,1-dimethyl- urea trichloroacetate	3-(p-chlorophenyl)-1,1-dimethyl- urea + TCA	2,3,6-trichlorophenylacetamide	2,3,5-trichlorobenzoic acid	2,3,6-TBA	2,3,6-trichlorobenzoic acid-L- leucine	2,5-dichloro-3-nitrobenzoic acid	2-methoxy-3,5-dichlorobenzoic acid	2-methoxy-3,5,6-trichloro- benzoic acid	
Lima beans		62	39	79	90	72	82	80	10	100	0	50	100	29	
Cucumber		62	29	82	100	72	91	100	30	100	3	10	100	91	
Cotton		60	29	69	39	49	20	92	10	60	3	32	72	29	
Soybeans		42	39	70	32	10	22	100	0	100	20	32	0	72	
Sugar beets		59	27	62	55	27	29	93	32	100	20	52	72	40	
Flax		30	39	52	32	40	29	80	22	70	10	45	50	39	
Snapbeans		50	39	59	42	49	39	93	32	80	40	52	90	29	
Safflower		52	39	92	42	42	42	90	52	80	20	80	100	91	
Castorbeans		62	22	89	69	49	62	93	17	50	0	0	42	15	
Corn		39	89	91	20	39	20	15	20	0	15	29	9	0	
Peanuts		39	12	72	42	22	42	92	20	90	20	20	72	22	
Gladiolus		5	5	5	10	0	10	15	0	0	0	10	0	0	
Walnuts		100	5	10	100	100	100	100	0	20	0	32	0	100	
Pecans		19	5	29	32	42	42	100	0	20	0	0	0	20	
Chestnuts		82	5	29	100	93	93	100	30	100	0	0	0	20	
Sorghum		52	90	92	72	42	72	39	0	20	0	0	12	0	
Budan grass		59	93	92	69	30	62	32	0	20	0	0	0	0	
Buckwheat		72	19	42	42	15	49	39	0	30	0	0	90	20	
Squash		91	39	49	91	32	69	100	22	33	0	0	82	39	
Oats		90	92	29	72	39	62	32	40	60	0	0	29	22	
Copeas		30	52	62	12	32	10	92	22	90	10	27	42	32	
Red clover		90	82	100	100	100	100	100	42	100	0	90	93	90	
Alfalfa		39	82	92	93	90	72	100	52	100	30	60	100	100	
Lespedeza		12	12	92	100	90	93	100	52	100	20	42	39	39	
White clover		32	52	93	100	100	100	100	52	100	0	90	90	93	
B-ft. trefol		30	42	40	100	100	82	100	52	93	0	32	93	22	
Crop Tox. Av.		52	41	64	64	53	57	80	23	68	8	30	9	38	
Weeds:															
Crabgrass		20	10	92	100	62	72	90	0	30	0	60	0	0	
Ryegrass		40	19	12	93	70	42	79	0	0	0	60	0	0	
Pigweed		12	19	39	93	22	62	79	60	100	0	20	79	22	
Mustard		29	5	0	100	100	62	2	60	90	15	40	90	42	
Lambsquarters		12	19	29	91	62	80	79	60	100	25	30	0	22	
Grasses		29	10	52	91	62	72	90	0	20	0	60	30	0	
Broadleaf		12	19	39	93	62	62	79	60	60	25	40	93	22	
Weed Tox. Av.		22	14	38	94	63	65	71	34	57	9	44	4	16	
Total Tox. Av.		46	35	59	70	55	59	78	26	66	8	33	8	33	

Table 50

Crops	Rate lb /A	Chemicals applied pre-emergence													
		sodium salt of polychlorobenzolic acid	potassium salt of polychlorobenzolic acid	monoethanolamine salt of polychlorobenzolic acid	diethanolamine salt of polychlorobenzolic acid	triethanolamine salt of polychlorobenzolic acid	CIPC	4-chloro-2-butynyl N-(3-chlorophenyl)carbamate	EPTC	CDEB	2-methoxy-4-diethylamino-6-isopropylamino-s-triazine	2-methoxy-4-isopropylamino-6-ethylamino-s-triazine	2-methoxy-4,6-bis(ethylamino)-s-triazine	2-methoxy-4,6-bis(isopropylamino)-s-triazine	
Lima beans		69	39	39	22	22	70	10	70	39	90	100	100	90	100
Cucumber		72	39	30	29	22	69	10	69	29	100	100	100	100	100
Cotton		72	39	37	29	22	60	10	69	47	10	93	91	91	06
Soybeans		72	62	37	42	19	20	0	40	30	20	100	93	0	63
Sugar beets		93	82	82	59	60	90	10	40	15	100	100	100	100	100
Flax		99	42	39	29	22	100	50	30	19	100	100	100	82	100
Snapbeans		51	93	73	50	52	40	0	37	25	90	100	100	100	100
Safflower		82	60	57	39	29	40	20	07	04	91	100	100	100	63
Castorbeans		39	64	42	39	39	10	90	93	59	91	100	100	63	100
Corn		15	7	20	9	25	60	15	37	40	15	42	46	17	74
Peanuts		62	42	22	22	22	40	0	17	62	17	15	52	0	27
Gladiolus		0	0	0	0	5	10	0	14	22	32	100	100	29	25
Walnuts		69	32	25	20	20	10	0	20	9	5	15	17	0	27
Pecans		100	32	25	20	20	25	0	40	72	32	42	72	29	12
Chestnuts		93	62	20	20	20	30	40	100	100	100	100	100	29	100
Sorghum		20	10	29	19	10	92	20	93	93	29	60	93	29	68
Sudan grass		20	10	19	19	10	93	10	93	93	29	59	89	29	68
Buckwheat		29	9	15	22	22	100	80	30	52	46	100	100	32	100
Squash		39	59	39	39	39	15	50	44	39	39	100	100	71	100
Oats		39	19	22	29	32	93	40	100	32	69	93	100	70	100
Compeas		59	72	52	39	42	30	40	39	30	59	100	93	62	16
Red clover		93	93	62	52	90	70	30	0	2	100	100	100	100	100
Alfalfa		93	72	80	42	42	70	20	20	39	100	100	100	100	100
Lespedeza		100	91	72	72	90	50	0	10	19	100	100	100	100	100
White clover		93	93	60	92	90	70	10	60	100	100	100	100	100	100
B-ft. trefoll		100	17	42	52	92	0	30	0	2	100	100	100	100	100
Crop Tox. Av.		64	51	41	34	36	56	25	43	37	64	85	90	60	86
Weeds:															
Crabgrass		12	25	9	0	0	60	10	60	22	93	100	100	93	100
Ryegrass		0	0	0	0	0	100	80	100	50	93	82	92	63	91
Pigweed		82	49	29	42	22	60	0	40	72	91	100	63	63	100
Mustard		29	9	0	10	10	100	0	30	0	100	100	100	100	100
Lambquarters		82	49	42	39	30	70	0	69	69	100	100	100	100	100
Grasses		19	9	9	0	0	70	10	50	22	82	89	93	60	93
Broadleaf		82	49	29	39	30	50	0	50	72	91	100	93	16	100
Weed Tox. Av.		43	27	17	19	13	73	14	57	44	93	96	96	94	88
Total Tox. Av.		60	46	36	30	31	59	23	46	39	70	87	91	67	88

Table 54

Crops	Rate lb/A	Chemicals applied post-emergence									
		2-methoxy-4-isopropylamino-6-ethylamino-s-triazine	2-methoxy-4,6-bis(ethylamino)-s-triazine	2-methoxy-4,6-bis(isopropylamino)-s-triazine	2-chloro-4-ethylamino-6-diethylamino-s-triazine	2-chloro-4-diethylamino-6-isopropylamino-s-triazine	2-chloro-4-n-propylamino-6-isopropylamino-s-triazine	2-chloro-4-isopropylamino-6-methylamino-s-triazine	2-chloro-4-isopropylamino-6-ethylamino-s-triazine	simazine	CDT
Lima beans	93	19	29	19	93	19	79	100	32	100	100
Cucumber	100	100	100	100	100	100	100	100	100	100	100
Cotton	39	20	25	27	60	42	59	59	19	15	100
Soybeans	100	100	100	77	82	69	93	100	79	100	100
Sugar beets	100	93	93	93	93	91	93	100	93	79	100
Flax	72	59	80	70	79	72	93	93	71	42	100
Snapbeans	93	79	93	90	93	80	93	100	91	47	100
Safflower	100	91	92	100	100	100	93	100	100	100	100
Castorbeans	100	100	100	100	100	100	100	100	100	50	100
Corn	52	29	69	24	27	52	10	15	20	22	79
Peanuts	59	32	55	59	79	59	100	100	10	19	79
Gladiolus	35	15	19	0	20	20	34	30	15	10	79
Chestnuts	-	0	47	15	0	19	9	49	30	0	59
Sorghum	72	49	59	35	45	47	20	29	42	69	50
Sudan grass	72	49	59	35	45	49	20	29	42	69	39
Buckwheat	82	59	91	90	87	93	100	100	100	100	25
Squash	100	69	100	100	100	93	100	100	100	100	93
Oats	62	69	69	90	90	69	79	100	100	100	93
Cowpeas	93	79	79	82	90	79	100	100	90	39	100
Red clover	100	90	93	90	100	69	100	100	90	52	93
Alfalfa	80	69	62	69	100	90	93	100	71	93	100
Lespedeza	100	69	91	90	100	100	100	100	77	59	100
White clover	100	90	93	92	100	72	100	100	91	52	93
B-ft. trefoil	100	90	93	70	100	72	100	100	91	52	93
Sansevieria	15	0	0	0	0	0	0	0	0	0	16
Crop Tox. Av.	80	61	72	65	75	66	75	80	71	40	86
Weeds:											
Crabgrass	70	15	32	0	0	29	49	69	79	62	39
Ryegrass	19	52	39	50	39	19	74	79	100	34	59
Figweed	49	19	39	17	59	20	49	79	39	0	91
Mustard	70	42	49	69	79	69	91	100	93	59	100
Lambsquarters	69	19	39	17	59	20	49	79	39	100	79
Grasses	70	19	30	0	0	29	49	69	79	62	39
Broadleaf	69	19	39	12	59	20	49	79	39	0	79
Weed Tox. Av.	59	26	38	24	42	29	59	79	67	37	72
Total Tox. Av.	75	53	64	56	68	58	71	80	70	39	83

1,1'-ethylene-2,2'-dipyridylum
s-triazine2-chloro-4,6-bis(isopropylamino)-
s-triazine

CDT

simazine

2-chloro-4-isopropylamino-6-
ethylamino-s-triazine2-chloro-4-isopropylamino-6-
methylamino-s-triazine2-chloro-4-n-propylamino-6-
isopropylamino-s-triazine2-chloro-4-diethylamino-6-
isopropylamino-s-triazine2-chloro-4-ethylamino-6-diethyl-
amino-s-triazine2-methoxy-4,6-bis(isopropylamino)-
s-triazine2-methoxy-4,6-bis(ethylamino)-s-
triazine2-methoxy-4-isopropylamino-6-
ethylamino-s-triazineChemicals
applied
post-emergence